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AIR QUALITY AND LAND USE HANDBOOK: A COMMUNITY HEALTH PERSPECTIVE



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Introduction

The California Air Resources Board (ARB/Board) has produced this Handbook to promote better, more informed decision-making by local land use agencies that will improve air quality and public health in their communities. ARB and local air pollution control and air quality management districts (local air districts) share responsibility for improving statewide air quality. As a result of California's air pollution control programs, air quality has improved and health risk has been reduced statewide. However, State and federal air quality standards are still exceeded in many areas of California and the statewide health risk posed by toxic air contaminants (air toxics) remains too high. Also, some communities experience higher pollution exposures than others -- making localized impacts, as well regional or statewide impacts, an important consideration.

In this respect, statewide or regional air pollution controls may not always prevent localized adverse health impacts. Instead, land use policies and practices, including planning, zoning, and siting activities, can play a critical role in air quality and public health in local communities. For instance, even with the best available control technology, some projects that are sited very close to homes, schools, and other public places can result in elevated air pollution exposures. The reverse is also true – siting a new school or home too close to an existing source of air pollution can be a problem.

Avoiding these incompatible land uses is a key to reducing localized air pollution exposures that can result in adverse health impacts, especially to sensitive individuals.

Sensitive individuals refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses where sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, day care centers, nursing homes, hospitals, and residential communities.

Individual siting decisions that result in incompatible land uses are often the result of locating “sensitive” land uses next to polluting sources. These decisions can be of even greater concern when existing air pollution exposures in a community are considered. In general terms, this is often referred to as the issue of “cumulative impacts.” ARB is working with local air districts to better define these situations, and to make information about existing air pollution levels (e.g., from local businesses, motor vehicles, and other areawide sources) more readily available to land use agencies.

In December 2001, the Board adopted “Policies and Actions for Environmental Justice” (Policies). These Policies were the product of a nearly two year process

led by the ARB, in coordination with a group of interested stakeholders of varied perspectives and insights, representing local land use and air agencies, community interest groups, environmental justice organizations, academia, and business (Environmental Justice Stakeholders Group).

The Policies included a commitment to work with land use planners, transportation agencies, and local air districts to develop ways to identify, consider, and reduce cumulative air pollution emissions, exposure, and health risks associated with land use planning and decision-making. Developed under the auspices of the ARB's Environmental Justice Stakeholders Group, this Handbook is a first step in meeting that commitment.

Objectives:

ARB has produced this Handbook to help achieve several objectives:

- Identify approaches that land use agencies can use to prevent or reduce potential air pollution impacts associated with general plan policies, new land use development, siting, and permitting decisions;
- Improve and facilitate access to air quality data and evaluation tools for use in the land use decision-making process;
- Encourage stronger collaboration between land use agencies and local air districts to reduce community exposure to source-specific and cumulative air pollution impacts; and
- Emphasize community outreach approaches that promote active public involvement in the air quality/land use decision-making process.

Background:

This Handbook builds upon California's 2003 General Plan Guidelines. These Guidelines, developed by the Governor's Office of Planning and Research (OPR), explain the land use planning process and applicable legal requirements. This Handbook also builds upon a 1997 ARB report, "The Land Use-Air Quality Linkage" ("Linkage Report").¹ The Linkage Report was an outgrowth of the California Clean Air Act which, among other things, called upon local air districts to focus particular attention on reducing emissions from sources that indirectly cause air pollution by attracting vehicle trips. Such indirect sources include, but are not limited to, shopping centers, schools and universities, employment centers, warehousing, airport hubs, medical offices, and sports arenas. The Linkage Report summarizes data as of 1997 on the relationships between land use, transportation, and air quality, and highlights strategies that can help to

¹ To access this report, please refer to ARB's website or click on:
<http://www.arb.ca.gov/ch/programs/link97.pdf>

reduce the use of single occupancy automobile use. Such strategies complement ARB regulatory programs that continue to reduce motor vehicle emissions.

In this Handbook, we identify types of air quality-related information that land use agencies should consider in the land use decision-making processes such as the development of regional, general, and community plans; zoning ordinances; environmental reviews; project siting; and permit issuance. Most importantly, the Handbook identifies siting scenarios that could result in health risk from air pollution. It also contains information on approaches and methodologies for evaluating proposed new projects from an air pollution perspective.

This Handbook is an informational document that we hope will strengthen the relationship between air quality and land use agencies . It highlights the need for land use agencies to address the potential for new projects to result in localized health risk or contribute to cumulative impacts where air pollution sources are concentrated.

This Handbook looks at air quality issues associated with emissions from industrial, commercial, and mobile sources of air pollution. Mobile sources continue to be the largest overall contributors to the State's air pollution problems, representing the greatest air pollution health risk to most Californians. Based on current health risk information for air toxics, the most serious pollutants on a statewide basis are diesel particulate matter (diesel PM), benzene, and 1,3-butadiene, all of which are primarily emitted by motor vehicles. At the State level, ARB continues to pursue new strategies to further reduce motor vehicle-related emissions in order to meet air quality standards and reduce air toxics risk on a statewide and regional basis.

While mobile sources are the largest overall contributors to the State's air pollution problems, industrial and commercial sources can also pose a health risk, particularly to people near the source. For this reason, the issue of incompatible land uses is an important focus of this document.

Handbook Audience

While the primary users of the Handbook will likely be agencies responsible for air quality and land use planning, the ideas and technical issues presented in this Handbook may also be useful for:

- public and community organizations and community residents;
- federal, State and regional agencies that fund, review, regulate, oversee, or otherwise influence environmental policies and programs affected by land use policies; and
- private developers.

Organization of the Handbook

This Handbook is organized into 6 sections. The sections lead the reader through a sequence of questions aimed at framing the issue of localized and cumulative air pollution impacts, and identifying the available tools and approaches for addressing these issues. Land use and air agency authorities are discussed in the context of how they can be applied to assess air pollution impacts at the neighborhood level. One section discusses project categories or siting scenarios that may require careful assessment by land use agencies, while other sections describe tools and approaches that can assist these agencies in the decision-making process and reduce the potential for cumulative impacts from new projects. This Handbook also discusses ways that public involvement in the process can be enhanced.

This Handbook contains seven appendices. Appendix A lists land use classifications and associated facility categories that could emit air pollutants. Appendix B contains a listing of useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts. Appendix C contains general air quality information and tools that land use agencies can access for use in assessing air pollution impacts. Appendix D provides background information on the role that land use and air quality agencies play in the land use process. Appendix E describes special evaluation processes that apply to school siting. Appendix F discusses general processes and approaches commonly used by land use agencies to address air pollution impacts. Appendix G is a glossary of key air pollution terms that are used in the Handbook.

Technical Supplements

The Handbook is intended as a framework for informed decision-making. In addition, ARB, in conjunction with local air districts, is developing supporting technical information. These Technical Supplements will provide reference materials, including assessment tools and information on potential mitigation approaches.

Acknowledgments

The ARB staff would like to acknowledge the exceptional contributions made to this document by members of the ARB Environmental Justice Stakeholders Group. Since 2001, ARB staff has consistently relied on this group to provide critical and constructive input on implementing the specifics of ARB's environmental justice policies and actions. The Stakeholders Group is convened by the ARB, and comprised of representatives from local land use and air agencies, community interest groups, environmental justice organizations, academia, and business. Their assistance and suggestions throughout the development of this Handbook have been invaluable.

1. What key issues should land use agencies consider to help reduce air pollution in their communities?

The key air quality issues that land use agencies should consider in their planning, zoning, and permitting processes are:

- 1) Incompatible Land Uses.** Localized air pollution impacts from incompatible land use can occur when a polluting source, such as a heavily trafficked roadway, warehousing facilities, or industrial or commercial facilities, is located near a land use where sensitive individuals are found such as a school, hospital, or homes.
- 2) Cumulative Impacts.** Cumulative air pollution impacts can occur from a concentration of multiple sources that, individually comply with air pollution control requirements or fall below risk thresholds, but in the aggregate may pose a public health risk to exposed individuals. These sources can be heavy or light-industrial operations, commercial facilities such as autobody shops, large gas stations, dry cleaners, and chrome platers, and freeways or other nearby busy transportation corridors.

Incompatible Land Uses

Land use policies and practices can generate or worsen air pollution and adversely affect public health by mixing incompatible land uses. Examples include locating housing or schools next to small metal plating facilities that use a highly toxic form of chromium, or very near large industrial facilities or freeways. Based on recent monitoring and health-based studies, we now know that air quality impacts from incompatible land uses can contribute to increased risk of illness, missed work and school, a lower quality of life, and higher costs for public health and pollution control.²

Air agencies also recognize that avoiding incompatible land uses can be a challenge in the context of mixed-use commercial/residential zoning. On the one hand, government agencies and housing advocates have encouraged the proximity of affordable housing to employment centers, shopping areas, and transportation corridors for a variety of reasons, including as a means to reduce vehicle trips and the associated emissions. However, distances between some businesses and industries and other land uses such as homes and schools, should be adequate to avoid health risks. Planners should be aware that common commercial uses such as dry cleaners, autobody shops, and very large gas stations emit toxic pollutants that may expose nearby residents to health risk. Air agencies have developed screening and assessment methods to determine the health risk for specific siting scenarios. Section 4 contains more information on siting scenarios of potential concern.

² For more information, the reader should refer to ARB's website on community health: <http://www.arb.ca.gov/ch/ch.htm>

The proposed location of a project is a major factor in determining whether it will result in localized air quality impacts. Often, providing an adequate distance, or buffer, between a source of emissions and nearby individuals will avoid a potential problem. Sometimes, project design changes or mitigation measures can be suggested in the project review phase to reduce or avoid potential impacts. This underscores the importance of addressing potential incompatible land uses as early as possible in the project review process.

Cumulative Air Pollution Impacts

The broad concept of cumulative air pollution impacts reflects the combination of regional air pollution levels and any localized impacts. Many factors contribute to air pollution levels experienced in any location. These include urban background air pollution, historic land use patterns, the prevalence of freeways and other transportation corridors, the concentration of industrial and commercial businesses, and local meteorology.

When considering the potential air quality impacts of polluting sources on individuals, project location and the concentration of emissions from air pollution sources need to be considered in the land use decision-making process. In section 2, the Handbook offers a series of questions that helps land use agencies determine if a project should undergo a more careful analysis. This holds true regardless of whether the project being sited is a polluting source or a sensitive site.

Large industrial areas are not the only land uses that may result in public health concerns in mixed-use communities. Cumulative air pollution impacts can also occur if land uses do not adequately buffer or otherwise protect sensitive individuals from potential air pollution impacts from nearby commercial-industrial or light industrial sources. This can occur with activities such as truck idling and traffic congestion, or from indirect sources such as warehousing facilities that are located in a community or neighborhood. Readers should refer to ARB's Linkage Report for ideas that should be considered when balancing clean air with other community goals for jobs, housing, and transportation mobility in mixed-use areas that have the potential for cumulative impacts.

2. What mechanisms can land use agencies use to avoid or help reduce air pollution-related health risk associated with new projects?

Land use agencies should use each of their existing planning, zoning, and permitting authorities to address the potential health risk associated with new projects.

Land use-specific mechanisms can go a long way toward addressing both localized and cumulative impacts from new air pollution sources. Additionally, close collaboration and communication between land use agencies and local air districts in both the planning and project approval stages can further reduce these impacts. Local agency partnerships can also result in early identification of potential impacts from proposed activities that might otherwise escape environmental review. When this happens, pollution problems can be prevented or reduced before projects are approved, when it is less complex and expensive to mitigate.

The following provides some general and specific approaches that can help to reduce the impacts that projects may have on public health.

Planning

The primary purpose of planning, and the source of government authority to engage in planning, is to protect the public health, safety, and welfare. Incompatible land uses may create health, safety, and welfare issues for the community. In its most basic sense, the General Plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, forming the basis for most land use decisions. Therefore, the most effective mechanism for dealing with the central land use concept of compatibility and its relationship to cumulative air pollution impacts is the General Plan. Well before projects are proposed within a jurisdiction, the General Plan sets the stage for where projects can be sited, and their compatibility with comprehensive community goals, objectives, and policies. Designed properly, a General Plan can reduce the need for conditional use permits or other mitigation measures.

In 2003, OPR revised its General Plan Guidelines, highlighting the importance of incorporating sustainable development and environmental justice policies in the planning process. The OPR General Plan Guidelines provides an effective and long-term approach to reduce cumulative air pollution impacts at the earliest planning stages. In light of these important additions to the Guidelines, land use agencies should consider updating their General Plans or Plan elements to address these revisions.

The General Plan and related Plan elements can address or integrate air quality goals, objectives, policies, and strategies by incorporating air quality considerations into these documents. For instance, a General Plan safety element with an air quality component could be used to incorporate policies or objectives that are intended to protect the public from air toxics. Likewise, an air quality component to the transportation circulation element of the General Plan could include policies or standards to prevent or reduce local exposure to diesel exhaust from trucks and other vehicles. For instance, the transportation circulation could encourage the construction of alternative routes away from residential areas for heavy-duty diesel trucks or could encourage the use of clean-fueled buses. By considering the relationship between air quality and transportation, the circulation element could also include air quality policies to prevent or reduce trips and travel, and thus vehicle emissions. Policies in the land use element of the General Plan could identify areas appropriate for future industrial, commercial, and residential uses, and introduce design and distance parameters that reduce emissions, exposure, and risk from commercial or industrial land uses that are in close proximity to residential areas or schools.

Land use agencies should also consider updating or creating an air quality element in the jurisdiction's General Plan. In the air quality element, local decision-makers could develop long-term, effective plans and policies to address air quality issues, including cumulative impacts. The air quality element can also provide a general reference guide that informs local land use planners about regional and community level air quality, regulatory air pollution control requirements and guidelines, references emissions and pollution source data bases and assessment and modeling tools. As is further described in Appendix C of the Handbook, new assessment tools that ARB is developing can be included into the air quality element by reference. For instance, ARB's statewide risk maps could be referenced in the air quality element as a resource that could be consulted by developers or land use agencies

Zoning Requirements

Zoning requirements may not always reflect the most recent policies and findings regarding community health and localized or cumulative air pollution impacts. Where this is the case, new projects may exacerbate poor land use practices of the past and contribute to existing air pollution problems in the community. Planners may want to do additional analyses when looking at the mixing of residential and industrial uses to prevent air quality impacts.

Sometimes, especially in mixed-use zones, there is a potential for certain categories of existing commercial and/or industrial operations to result in cumulative impacts to new development projects. For example:

- An assisted living project is proposed for a mixed-use zone adjacent to an existing chrome plating facility, or several dry cleaners;

- Multiple industrial sources regulated by a local air district are located directly upwind of a new apartment complex;
- A mixed residential/light industrial or commercial/industrial zone will attract diesel-fueled delivery trucks and transport refrigeration units when a new warehousing center is proposed;
- A new housing development is sited downwind or adjacent to businesses that emit air toxics; or
- A new housing development or sensitive receptor location is sited without adequate setbacks from an existing major transportation corridor or railyard.

By separating incompatible land uses (for instance with transitional or buffer zone areas), zoning requirements can prevent or reduce both localized and cumulative air pollution impacts. Land use agencies should also consider available options to reduce the pollution impacts of commercial processes or operations without denying what would otherwise be a desirable project.³ For instance:

- a new supermarket project could reduce truck idling for goods delivery;
- a dry cleaner could open a storefront operation in a community with actual cleaning operations performed at a remote location away from residential areas;
- gas stations with lower fuel throughput could be sited in mixed-use commercial areas;
- sound walls could provide some buffer between a housing complex and a nearby freeway;
- enhanced building ventilation or filtering systems in schools or senior care centers can reduce ambient air from nearby busy arterials; or
- landscaping and regular watering can be used to reduce fugitive dust at a building construction site near a school yard.

Zoning codes could be updated to separate incompatible land uses for proposed new projects. The need for buffer zones, which separate industrial and residential land uses, or transitional use zones such as green spaces, should be considered. As part of the public process for making zoning changes, local land use agencies could work with community planning groups, local businesses, and community residents to determine how best to address existing incompatible land uses. Section 4 contains additional information on project siting scenarios that should be carefully examined, along with examples of corrective measures that should be considered.

³ It should be noted that such actions should also be considered as part of the General Plan or Plan element process.

Land Use Permitting Processes

■ Questions to Consider When Reviewing New Projects

It is important for land use agencies to ask appropriate questions about the potential impacts of proposed projects – both from the perspective of the specific project as well as in the nature of existing air pollution sources in the same impact area. Land use information can answer questions about the proximity of air pollution sources to sensitive individuals, the potential for incompatible land uses, and the location and nature of nearby air pollution sources. Air quality information, available from the ARB and local air districts, can provide information about the types and amounts of air pollution emitted in an area, regional air quality concentrations, and health risk estimates for specific sources.

General Plans, parcel maps, and zoning maps are an excellent starting point to understand the potential impacts in different locations. These documents contain information about existing or proposed land uses for a specific location as well as the surrounding area. Often, just looking at a map of the proposed location for a facility and its surrounding area will help to identify potential adjacent incompatible land uses.

The following pages are a “pull-out” list of questions to consider and cross-references to pertinent information in the Handbook. These questions are intended to assist land use agencies in evaluating potential air quality-related concerns associated with new project proposals.

The first group of questions contain project related questions designed to help identify localized project impacts, particularly incompatible land uses. The second group of questions focuses on the issue of potential cumulative impacts by including questions about existing emissions and air quality in the community, and community feedback. Depending on the answers to these questions, a land use agency may decide a more detailed review is warranted.

The California Department of Education has already developed a detailed process for school siting which is outlined in Appendix E. However, school districts may also find this section helpful when evaluating the most appropriate site for new schools in their area. At a minimum, using these questions may encourage school districts to engage throughout their siting process with land use agencies and local air districts. The combined expertise of these entities can be useful in devising relevant design standards and mitigation measures that can reduce exposure to cumulative emissions, exposure, and health risk to students and school workers.

As indicated throughout the Handbook, we strongly encourage land use agencies to consult early and often with local air districts. Local air districts have the expertise, many of the analytical tools, and a working knowledge of the polluting sources that they regulate. It is also critical to fully involve the public and

businesses that could be affected by the siting decision. The questions provided in the chart below do not imply any particular action should be taken by land use agencies. Rather the questions are intended to improve the assessment process and facilitate informed decision-making.

■ Project-Related Questions

This section includes project-related questions that, in conjunction with the questions in the next section, can be used to tailor the project evaluation. These questions are designed to help identify the potential for incompatible land uses from localized project impacts.

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
<p>1. Is the proposed project:</p> <ul style="list-style-type: none"> ▲ A business or commercial license renewal ▲ A new or modified commercial project ▲ A new or modified industrial project ▲ A new or modified public facility project ▲ A new or modified transportation project ▲ A housing or other development in which sensitive individuals may live or play 	<p>See Appendix A for typical land use classifications and associated project categories that could emit air pollutants.</p>
<p>2. Does the proposed project:</p> <ul style="list-style-type: none"> ▲ Conform to the zoning designation? ▲ Require a variance to the zoning designation? ▲ Are there plans to expand operations over the life of the business such that additional emissions may increase the pollution burden in the community (e.g., from additional truck operations, new industrial operations or process lines, increased hours of operation, build-out to the property line, etc.)? 	<p>See Appendix F for a general explanation of land use processes.</p> <p>In addition, Section 1 contains a discussion of how land use planning, zoning, and permitting practices can result in incompatible land uses or cumulative air pollution impacts.</p>
<p>3. Has the local air district provided comments or information to assist in the analysis?</p>	<p>See Section 3 and Appendix C for a description of air quality-related tools that the ARB and local air districts use to provide information on potential air pollution impacts.</p>
<p>4. Have public meetings been scheduled with the affected community to solicit their involvement in the decision-making process for the proposed project?</p>	<p>See Section 6 for a discussion of public participation, information and outreach tools.</p>
<p>5. If the proposed project will be subject to local air district regulations:</p> <ul style="list-style-type: none"> ▲ Has the project received a permit from the local air district? ▲ Would it comply with applicable local air district requirements? ▲ Is the local air district contemplating new 	<p>See Appendix C for a description of local air district programs.</p>

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
<p>regulations that would reduce emissions from the source over time?</p> <ul style="list-style-type: none"> ▲ Will potential emissions from the project trigger the local air district's new source review for criteria pollutants or air toxics emissions? ▲ Is the local air district expected to ask the proposed project to perform a risk assessment? ▲ Is there sufficient new information or public concern to call for a more thorough environmental analysis of the proposed project? ▲ Are there plans to expand operations over time? ▲ Are there land-used based air quality significance thresholds or performance standards that could be applied to this project in addition to applicable air district requirements? 	
<p>6. If the proposed project is not regulated by the local air district:</p> <ul style="list-style-type: none"> ▲ Is the local air district informed of the project? ▲ Should they be? ▲ If the project produces emissions, either directly or indirectly, does the local air district believe that there could be potential air pollution impacts associated with this project category because of the proximity of the project to sensitive individuals? ▲ If the project is one in which individuals live or play (e.g., a home, playground, convalescent home, etc.), does the local air district believe that the project's proximity to nearby sources could pose potential air pollution impacts? ▲ Are there indirect emissions that could be associated with the project (e.g, truck traffic or idling, transportation refrigeration units operations, stationary diesel engine operations, etc.) that will be in close proximity to sensitive individuals? ▲ Will the proposed project increase or serve as a magnet for diesel traffic? ▲ Are there land-used based air quality significance thresholds or performance standards that could be applied to this project in addition to applicable air district requirements? ▲ Is there sufficient new information or public 	<p>See Section 4 for a discussion of project types or siting scenarios that may warrant a more detailed analysis of air quality impacts.</p>

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
<p>concern to call for a more thorough environmental analysis of the proposed project?</p> <ul style="list-style-type: none"> ▲ Should the site approval process include identification and mitigation of potential direct or indirect emissions associated with the potential project? 	
<p>7. Does the local air district or land use agency have pertinent information on the source?</p> <ul style="list-style-type: none"> ▲ Available permit and enforcement data, including for the owner or operator of the proposed source that may have other sources in the State. ▲ The proximity of the proposed project to sensitive individuals. ▲ Number of potentially exposed individuals from the proposed project. ▲ Potential for the proposed project to expose sensitive individuals to odor or other air pollution nuisances. ▲ Meteorology or the prevailing wind patterns between the proposed project and the nearest receptor, or between the proposed sensitive receptor project and sources that could pose a localized or cumulative air pollution impact. 	<p>See Appendix C for a description of local air district programs.</p> <p>See Appendix B for a listing of useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts.</p> <p>Also, do not hesitate to contact your local air district regarding answers to any of these questions that might not be available at the land use agency.</p>
<p>8. Based upon the project application, its location, and the nature of the source, could the proposed project:</p> <ul style="list-style-type: none"> ▲ Be a polluting source that is located in proximity, or otherwise upwind, of a location where sensitive individuals live or play? ▲ Attract sensitive individuals and be located in proximity to or otherwise downwind, of a source or multiple sources of pollution, including polluting facilities or transportation-related sources that contribute emissions either directly or indirectly? ▲ Result in health risk to the surrounding community? 	<p>See Section 1 for a discussion of what is an incompatible land use and the potential cumulative air pollution impacts.</p> <p>See Section 4 for a discussion of project types or siting scenarios that may warrant a more detailed analysis of air quality impacts.</p>
<p>9. If a CEQA categorical exemption is proposed, was the following considered?</p> <ul style="list-style-type: none"> ▲ Is the project site environmentally sensitive as defined by the project's location? (A project that is ordinarily insignificant in its impact on the environment may in a particularly sensitive environment be significant.) ▲ Would the project and successive future projects of the same type in the 	<p>See CEQA guidelines, section 15300, and Public Resources Code, section 21084.</p> <p>See also Section 4 for a discussion of project types or siting scenarios that may warrant a more detailed analysis of air quality impacts.</p>

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
<p>approximate location potentially result in cumulative impacts?</p> <p>▲ Are there "unusual circumstances" creating the possibility of significant effects?</p>	<p>See also Section 3 and Appendix C for a description of air quality-related tools that the ARB and local air districts use to provide information on potential air pollution impacts.</p>

■ Questions Related to Cumulative Impact Assessment

The questions can be used to provide the decision-maker with a better understanding of the community and the potential for cumulative air pollution impacts. Answers to these questions will help to evaluate if proposed new projects or activities warrant a more detailed review. It may also help to see potential environmental concerns from the perspective of the affected community. Additionally, responses can provide local decision-makers with information with which to assess the best policy options for addressing neighborhood-scale air pollution concerns.

These questions can be used to identify whether existing tools and procedures are adequate to address land use-related air pollution issues. This process can also be used to pinpoint what project characteristics that may have the greatest impact on community-level emissions, exposure, and risk. Such elements can include: the compliance record of existing sources including those owned or operated by the project proponent; the concentration of emissions from polluting sources within the approximate area of sensitive sites; transportation circulation in proximity to the proposed project; compatibility with the General Plan and General Plan elements; etc.

The local air district can provide useful assistance in the collection and evaluation of air quality-related information for some of the questions and should be consulted early in the process.

Technical Questions	Cross-Reference to Relevant Handbook Sections
1. Is the community home to heavy industrial or numerous light industrial facilities?	See Appendix A for typical land use classifications and associated project categories that could emit air pollutants.
2. Do one or more major freeways or high-traffic volume surface streets cut through the community?	See transportation circulation element of your general plan. See also Appendix B for useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts.
3. Is the area classified for mixed-use zoning?	See your general plan and zoning ordinances.

Technical Questions	Cross-Reference to Relevant Handbook Sections
4. Is there an available list of air pollution sources in the community?	Contact your local air district.
5. Has a walk-through of the community been conducted to corroborate available information on land use activities in the area (e.g., businesses, housing developments, sensitive individuals, etc.)?	See Appendix B for a listing of useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts.
6. Has a walk-through of the community been conducted to determine the proximity of existing and anticipated future projects to residential areas or sensitive individuals?	See Appendix B for a listing of useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts.
7. Has a walk-through of the affected community been conducted to determine the concentration of emission sources (including anticipated future projects) to residential areas or sensitive individuals?	See Appendix B for a listing of useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts. Also contact your local air district.
8. Has the local air district been contacted to obtain information on sources in the community?	See Section 6 for a discussion of public participation, information and outreach tools.
9. What categories of commercial establishments are currently located in the area? Does the local air district have these sources on file as being regulated or permitted?	See Appendix A for typical land use classifications and associated project categories that could emit air pollutants. Also contact your local air district.
10. What categories of indirect sources such as distribution centers or warehouses are currently located in the area?	See Appendix A for typical land use classifications and associated project categories that emit air pollutants.
11. What air quality monitoring data are available?	Contact your local air district.
12. Have any risk assessments been performed on emission sources in the area?	Contact your local air district.
13. Does the land use agency have the capability of applying a GIS spatial mapping tool that can overlay zoning, sub-development information, and other neighborhood characteristics, with air pollution and transportation data?	See Appendix B for a listing of useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts. Also contact your local air district for tools that can be used to supplement available land use agency tools.
14. Based on available information, is it possible to determine if the community or neighborhood experiences elevated health risk due to a	Contact your local air district. Also see Section 4 for a discussion of project types or siting scenarios that

Technical Questions	Cross-Reference to Relevant Handbook Sections
concentration of air pollution sources in close proximity? If not, can the necessary information be obtained?	may warrant a more detailed analysis of air quality impacts.
15. Does the community have a history of chronic complaints about air quality (e.g., odor or general nuisance from dust)?	See Section 6 for a discussion of public participation, information and outreach tools. Also contact your local air district.
16. Is the affected community included in the public participation process for the agency's decision?	See Section 6 for a discussion of public participation, information and outreach tools.
17. Have community leaders or resident groups been contacted about any pre-existing or chronic community air quality concerns?	See Section 6 for a discussion of public participation, information and outreach tools. Also contact your local air district.

■ **Mitigation Approaches**

In addition to considering the suitability of the project location, opportunities for mitigation of air pollution impacts should be considered. Sometimes, a land use agency may find that selection of a different location for a project would not be desirable, timely, or feasible. When that happens, land use agencies should consider design improvements or other strategies that would reduce air pollution health risk. Such strategies could include conditional use permits, performance or design standards, mitigation measures, consultation with local air districts and other agencies on appropriate actions that these agencies should, or plan to, undertake, and consultation and outreach in the affected community. Potential mitigation measures should be feasible, cost-effective solutions within the available resources and authority of implementing agencies to enforce.⁴

■ **Conditional Use Permits and Performance Standards**

Some types of land uses are only allowed upon approval of a conditional use permit (also called a CUP or special use permit). A conditional use permit does not re-zone the land but specifies conditions under which a particular land use will be permitted. Such land uses would be those with potentially significant environmental impacts. Local zoning ordinances specify the uses for which a conditional use permit is required, the zones they may be allowed in, and public hearing procedures. When allowing a project, the conditional use permit

⁴ A land use agency has the authority to deny a project based upon information collected and evaluated through the land use decision-making process. However, any denial would need to be based upon identifiable, generally applicable, articulated standards set forth in the local government's General Plan, zoning codes, and other applicable local ordinances. One way of averting this is to conduct early and regular outreach to the community and the local air district so that community and environmental concerns can be addressed and accommodated into the project proposal.

imposes special requirements to ensure that the use will not be detrimental to its surroundings.

Conditional use permits can sometimes be useful in siting a project to reduce emissions that might otherwise pose an unacceptable impact to public health. Land use agencies should consider a range of conditional use options that could be applied generically to source categories of greatest concern. Conditional use permits can include non-regulatory performance standards, not typically imposed on the project by a local air district.

In the context of land use planning, performance standards are requirements imposed on projects or project categories through conditional use permits to ensure compliance with general plan policies and local ordinances. These standards could apply to such project categories as distribution centers, gas stations, autobody shops, dry cleaners, and metal platers. Land use agencies may wish to consider adding performance standards to zoning ordinances in mixed-use communities for certain project categories that can be sited in the zone. Such standards would provide certainty and equitable treatment to all projects of a similar nature, and reserve the more resource intensive conditional or special use permits to projects that require a more detailed analysis. In developing project design or performance standards, land use agencies should consult with the local air district to avoid duplication or inconsistency with local air district control requirements when considering the site-specific aspects of a project.

Examples of air quality-specific performance standards include the following:

- Placing a process vent away from the direction of the local playground that is nearby or increasing the stack height so that emissions are dispersed to have a reduced impact on surrounding homes or schools.
- Buffers, between the project fence line and the population center.
- A reduced-idling ordinance to apply to all operators of motor vehicle fleets (over a certain size) that use diesel-fueled engines.
- Limiting the hours of operation of a facility to avoid excess emissions exposure or foul odors to nearby individuals.
- An ordinance that requires fleet operators to purchase clean-fueled vehicles before project approval (if a new business), or when expanding the fleet (if an existing business); and
- Providing alternate routes for truck operations that discourage detours into residential neighborhoods.

■ **Local Air Districts and Other Agencies**

When questions arise regarding the air quality impacts of projects, including potential cumulative impacts, land use agencies should consult the local air district. Land use agencies should also consider the following suggestions to avoid creating new incompatible land uses:

- Consult with the local air district to help determine if emissions from a particular project will adversely impact sensitive individuals in the area, if existing or future effective regulations or permit requirements will affect the proposed project or other sources in the vicinity of the proposed project, or if additional inspections should be required.
- Check with ARB for new information on Technical Supplements and modeling tools that would be applicable to evaluating projects seeking to site within your jurisdiction. Also make use of ARB's clearinghouse for information on what measures other jurisdictions are using to address comparable issues or sources.⁵
- Become familiar with ARB's Land Use-Air Quality Linkage Report to determine whether approaches and evaluation tools contained in the Report can be used to reduce transportation-related impacts on communities.
- Contact and collaborate with other State agencies that play a role in the land use decision-making process, e.g., the State Department of Education, the California Energy Commission, and Caltrans, for information on mitigation measures and mapping tools that could be useful in addressing local problems.

■ **Public Outreach**

Actively soliciting input, sharing information, and offering incentives for good projects are critical to ensure good land use practices. Land use agencies should consider active outreach programs to educate the public on, and address public concerns relating to, the potential for cumulative impacts from new sources.

■ **Community-Based Planning Committees**

Neighborhood-based or community planning advisory councils could be established to invite and facilitate direct resident participation into the planning process. With the right training and technical assistance, such councils can provide valuable input and a forum for the review of proposed amendments to plans, zone changes, land use permits, and suggestions as to how best to prevent or reduce cumulative air pollution impacts in their community.

⁵ This information can be accessed from ARB's website by going to:
<http://www.arb.ca.gov/ch/clearinghouse.htm>

■ **Regional Partnerships**

Consider creating regional coalitions of key growth-related organizations from both the private and public sectors, with corporations, communities, other jurisdictions, and government agencies. Such partnerships could facilitate agreement on common goals and win-win solutions tailored specifically for the region. With this kind of dialogue, shared vision, and collaboration, barriers can be overcome and locally acceptable sustainable solutions implemented. Over the long term, such strategies will help to bring about clean air in communities as well as regionally.

■ **Direct Community Outreach**

In conjunction with local air districts, land use agencies should consider designing an outreach program for community groups, other stakeholders, and local government agency staffs that address the problem of cumulative air pollution impacts, and the public and government role in reducing them. Such a program could consider analytical tools that assist in the preparation and presentation of information in a way that supports sensible decision-making and public involvement. More detailed information can be found in Section 6.

■ **Information Clearinghouse**

Land use agencies should consider using the ARB statewide electronic clearinghouse that will be used to post this Handbook's technical supplements and other relevant information.

The next section addresses available air quality assessment tools that land use agencies can use to evaluate the potential for localized or cumulative impacts in their communities.

3. What assessment approaches are available to provide information on potential cumulative air pollution impacts?

Until recently, California has traditionally approached air pollution control from the perspective of assessing whether the pollution was regional, category-specific, or from new or existing sources. This methodology has been generally effective in reducing statewide and regional air pollution impacts and risk levels. However, such an incremental, category-by-category, source-by-source approach may not always address community health impacts from multiple sources – including mobile, industrial, and commercial facilities.

As a result of air toxics and children's health concerns over the past several years, ARB and local air districts have developed new tools to present, evaluate, and address cumulative air pollution impacts at the neighborhood scale where the potential for significant health impacts may exist. One aspect of ARB's programs now underway is to consolidate and make accessible air toxics emissions and monitoring data by region, using modeling tools and other analytical techniques to take a preliminary look at emissions, exposure, and health risk in communities.

ARB has developed multiple tools to assist land use agencies and local air districts perform assessments of cumulative emissions, exposure, and risk on a neighborhood scale. These include:

- Regional risk maps that show trends in inhalation cancer risk from toxic air pollutants in southern and central California between 1990 and 2010. These maps are based on the U.S. EPA's ASPEN model. These maps provide an estimate of background levels of toxic air pollutant risk but are not detailed enough to assess individual neighborhoods or facilities.⁶
- The Community Health Air Pollution Information System (CHAPIS) is a user-friendly, Internet-based system for displaying information on emissions from sources of air pollution in an easy to use mapping format. CHAPIS contains information on air pollution emissions from selected large facilities and small businesses that emit criteria and toxic air pollutants. It also contains information on air pollution emissions from motor vehicles. When released in 2004, CHAPIS did not contain information on every source of air pollution or every air pollutant. However, ARB continues to work with local air districts to include all of the largest air pollution sources and those with the highest documented air pollution risk. Additional facilities will be added to CHAPIS as more data become available.

⁶ For further information on these maps, please visit ARB's website at:
<http://www.arb.ca.gov/toxics/cti/hlthrisk/hlthrisk.htm>

- The Hot Spots Analysis and Reporting Program (HARP) is a software database package that evaluates emissions from one or more facilities to determine the overall health risk posed by the facility(ies) on the surrounding community. Proper use of HARP ensures that the risk assessment meets the latest risk assessment guidelines published by the State Office of Environmental Health Hazard Assessment (OEHHA). HARP is designed with air quality professionals in mind and is available from the ARB.
- The Urban Emissions Model (URBEMIS) is a computer program that can be used to estimate emissions associated with land development projects in California such as residential neighborhoods, shopping centers, office buildings, and construction projects. URBEMIS uses emission factors available from the ARB to estimate vehicle emissions associated with new land uses.

Land use planners, local air districts, and others can use these tools to assess a new project, or plan revision. For example, these tools can help to:

- Identify if there are multiple sources of air pollution in the community;
- Identify the major sources of air pollution in the area under consideration;
- Identify the background inhalation cancer risk from toxic air pollution in the area under consideration;
- Estimate the risk from a proposed new facility and how it adds to the overall risk from other nearby facilities; and
- Provide information to decision-makers and key stakeholders on whether there may be significant issues related to cumulative emissions, exposure, and health risk due to a permitting or land use decision.

The ARB is in the process of developing tools that show promise for assessing cumulative air pollution health impacts. Such tools are very data intensive, requiring current emissions data from businesses and industry, transportation sources, mobile sources, and land uses where sensitive individuals may live or play.

If a land use agency wishes to perform a cumulative air pollution impact analysis using any of these tools, it should consult with the ARB and/or the local air district to obtain information or assistance on the data inputs and procedures necessary to operate the program. In addition, land use agencies could consult with local air districts to determine the availability of land use and air pollution data for entry into an electronic Geographical Information System (GIS) format. GIS is an easier mapping tool than the more sophisticated models described in Appendix C. GIS mapping makes it possible to superimpose land use with air pollution information so that the spatial relationship between air pollution sources, sensitive receptors, and air quality can be visually represented. Appendix C provides a general description of the impact assessment process and micro-scale, or community level modeling tools that are available to evaluate potential cumulative air pollution impacts. Modeling protocols will be provided as

Technical Supplements to this Handbook. Additionally, the models will be accessible on ARB's website as they become available. The ARB will also provide land use agencies and local air districts with statewide regional modeling results and information regarding micro-scale modeling.

4. What types of siting scenarios could result in incompatible land uses from an air quality perspective?

The primary goal of this document is to avoid land use decisions that could result in a health risk from air pollution. Knowing the potential air quality impacts of a siting decision is essential. Air agencies have developed analytical methods that can be used to assess the potential health risk for various siting scenarios. Air quality impacts should be assessed whenever a land use decision would result in sensitive individuals being in the close proximity to toxic air pollutant sources that could pose a significant health risk. A screening process can help determine whether a detailed analysis is needed. This holds true whether you are siting a new industrial facility or a new project where sensitive individuals would be located. Table 4-1 lists such sensitive sites.

**Table 4-1
Sensitive Sites
(Projects Frequented by
Sensitive Individuals)**

- Schools
- Housing
- Day Care Centers
- Playgrounds
- Elder Care Centers
- Hospitals
- Youth Activity Centers

Source Categories of Concern

Table 4-2 lists the key types of facilities with the potential to emit air pollutants of concern that could pose a significant health risk to nearby sensitive individuals. Table 4-2 also identifies the toxic air pollutants and other pollutants of concern associated with these types of facilities. Not all sources of toxic air pollutants present a potential health risk of concern. The risk level is determined by a variety of factors including the amount of pollutant emitted, the toxicity of the substance, the distance to the individual, and the type of control equipment. Of these factors, distance is a critical determinant that falls under the authority of land use agencies. In general, proposed new projects from Table 4-1 should not be sited at the fence line of the types of facilities shown in Table 4-2, but a site specific analysis is usually necessary to determine what might be an appropriate distance.

New facilities in these categories are typically required to get a permit from the local air district, and/or perform a review to determine and address the potential for significant environmental impacts. However, environmental reviews of proposed new housing or other projects involving sensitive individuals often do not address whether the existing local environment would affect the health of new residents. Land use agencies should ensure that this issue is considered in the siting process.

When locating sensitive sites near any of the air pollution sources listed in

Table 4-2, land use agencies should consult with the local air district on appropriate screening and risk assessment procedures. For certain source categories from this list, ARB has developed examples of siting scenarios that can be used for screening purposes (Table 4-3). It was possible to develop category-specific screening information for these sources primarily because the risk analysis involves one dominant pollutant such as diesel particulate or hexavalent chromium. However, the majority of the sources in Table 4-2 may emit multiple pollutants, and involve a variety of processes, making a site specific screening or risk assessment necessary. When siting the types of “sensitive” projects in Table 4-1 near any of the facilities in Table 4-2, the results of screening or risk assessments should be used in order to avoid incompatible land uses.

Appendix A provides a more extensive list of land use classifications and associated facility categories that could emit air pollutants. The purpose of this appendix is to inform land use agencies about the types of air pollutants that are typically emitted by different project categories, including commercial and retail businesses, industry, transportation, and home building and construction.

Screening Distances for Key Source Categories

Based on the ARB’s past experience in assessing the impacts of air pollution sources, there are certain types of industrial, commercial, and transportation-oriented facilities that are more likely to result in elevated near-source air pollution impacts. Table 4-3 presents examples of source categories that the ARB staff has identified through past experience that have the potential to result in significant health risk from an air pollution perspective if located near sensitive individuals. The purpose of this list of examples is to provide land use agencies with a simple to use, qualitative, screening tool that could be used to help identify situations when a more in-depth analysis of the air quality impacts of a project would be warranted. This table should be used as a screening tool to indicate when additional analysis may be needed to investigate the potential for near-source air pollution impacts.

ARB staff used information from reports and analyses prepared by ARB and local air districts to develop the information contained in Table 4-3. Most of the information related to emissions of diesel particulate came from the ARB’s Diesel Risk Reduction Plan and information used to develop airborne toxic control measures for sources of diesel particulate adopted by the ARB. In the case of chrome platers, source testing and air monitoring studies supplemented the information from the airborne toxic control measure. A listing of the reports and studies consulted for the preparation of Table 4-3 is contained in Table 4-7 at the end of this section.

Table 4-2 – Examples of Facility Types That May Emit Air Pollutants of Concern

<u>Categories</u>	<u>Facility Type</u>	<u>Air Pollutants of Concern</u>
Commercial		
	Dry Cleaners*	Perchloroethylene
	Chrome Platers*	Hexavalent Chromium
	Gas Stations*	Benzene
	Autobody Shops	Metals, Solvents
	Furniture Repair	Solvents ¹ , Methylene Chloride
	Film Processing Services	Solvents, Perchloroethylene
	Cold Storage Distribution Centers*, Warehouses	Diesel Particulate Matter
	Printing Shops	Solvents
	Diesel Engines*	Diesel Particulate Matter
Industrial		
	Construction	Particulate Matter
	Manufacturers	Solvents, Metals
	Metal Platers, Welders, Metal Spray (flame spray) Operations	Hexavalent Chromium, Nickel, Metals
	Chemical Producers	Solvents, Metals
	Gasoline Refineries	Benzene, Solvents, Metals, PAHs, Dioxin
	Furniture Manufacturers	Solvents
	Shipbuilding and Repair	Hexavalent chromium and other metals, Solvents
	Rock Quarries and Cement Manufacturers	Particulate Matter
	Hazardous Waste Incinerators	Dioxin, Solvents, Metals
	Power Plants	Benzene, Formaldehyde, Particulate Matter
	Research and Development Facilities	Solvents, Metals, etc.
	Freight Distribution Centers	Diesel Particulate Matter
Public		
	Landfills	Benzene, Vinyl Chloride, Diesel Particulate Matter
	Waste Water Treatment Plants	Hydrogen Sulfide
	Medical Waste Incinerators	Dioxin, Benzene, PAH, PCBs, 1,3-Butadiene
	Recycling, Garbage Transfer Stations	Diesel Particulate Matter
	Municipal Incinerators	Dioxin, Benzene, PAH, PCBs, 1,3-Butadiene
Transportation		
	Port Facilities*	Diesel Particulate Matter, Methyl Bromide
	Airports	Benzene, Formaldehyde
	Rail Yards*	Diesel Particulate Matter
	Intermodal Facilities*	Diesel Particulate Matter
	Truck Stops*	Diesel Particulate Matter
	Freeways and Roadways*	Diesel Particulate Matter, Benzene, 1,3-Butadiene, Formaldehyde
Agricultural Operations		
	Farming Operations	Diesel Particulate Matter, VOCs, NOx, PM10, CO, SOx, Pesticides
	Livestock and Dairy Operations	Ammonia, VOCs, PM10

¹Not all solvents are toxic air contaminants. Some solvent use may emit toxic air pollutants.

*Categories discussed in more detail in Table 4-3.

General assumptions were made in developing Table 4-3, bracketing a fairly broad range of possible situations. In general, the distances contained in Table 4-3 correspond to cancer risk in the range of 25 to 200 in a million assuming a 70-year exposure. The risk calculations and distances are based on normal operating conditions and do not account for additional risks due to accidents, equipment malfunction, or spills. The risk assessment methodologies followed by ARB staff in preparing this table are consistent with either the California Office of Environmental Health Hazard Assessment or the CAPCOA Risk Assessment Guidelines.

Actual risk from these types of source categories will vary due to site specific parameters including equipment technologies, emission rates, fuel properties, meteorology, nature of surrounding buildings and terrain, and the location of the sensitive individuals. This table applies to proposals to site sources of air pollution near sensitive individuals or proposals to locate sensitive sites near sources of air pollution. Because there are many potential variables involved, the final decision should be based on site-specific information.

Each of the categories on Table 4-3 is discussed in more detail below.

Table 4-3

Examples of Siting Scenarios That Should Trigger a Thorough Analysis of Air Quality Impacts

Source Category	Size or Control Parameters	Distance to or from Sensitive Receptor
Rail Yards	Major	1 mile (1600 meters) or closer
Intermodal Facilities	Major	
Ports	Major	
Roadways with Heavy Diesel Truck Traffic	Traffic volume of over 20,000 heavy-duty diesel trucks per day	1000 feet (300 meters) or closer
Truck Stop	More than 300 diesel trucks per day	
Cold Storage Distribution Center	More than 100 transport refrigeration unit - equipped diesel trucks per day	
Chrome Platers	Any hard or decorative chrome plating facility	500 feet (150 meters) or closer
Freeway or Busy Traffic Corridor	Traffic volume of over 100,000 vehicles per day in urban area, 50,000 per day in rural area	
Dry Cleaner	Using 100 gallons of perchloroethylene per year; includes all dry cleaners co-located with residences	300 feet (90 meters) or closer
Large Gasoline Stations	With over 2,500,000 gallons annual throughput and having Phase I and II controls	50 feet (15 meters) or closer

Sources of Diesel Exhaust Particulate

Exposure to airborne diesel exhaust particulate accounts for approximately 70% of the health risk from air toxics in California. Many of the facilities in Tables 4-2

and 4-3 are related to emissions of diesel exhaust particulate. Figure 4-1 presents more specific information on the range of risk associated with facilities with diesel engines and equipment.

Figure 4-1 presents the results of air dispersion modeling to estimate the 70-year cancer risk associated with typical diesel-fueled engine or vehicle activities. The estimated risks presented in Figure 4-1, and the assumptions used to determine these risks, are not based on a specific source of diesel PM. Instead, general assumptions bracketing a fairly broad range of possible operating scenarios were used. The estimated risk ranges are used to provide a qualitative assessment of potential risk levels near sources of diesel PM. These estimates are based on the risk assessment methodology and assumptions described in the footnote.⁷ Actual risk levels from these types of sources at any individual site will vary due to site specific parameters, including equipment technologies and emission rates, fuel properties, operating schedules, meteorology, and the actual location of off-site receptors.

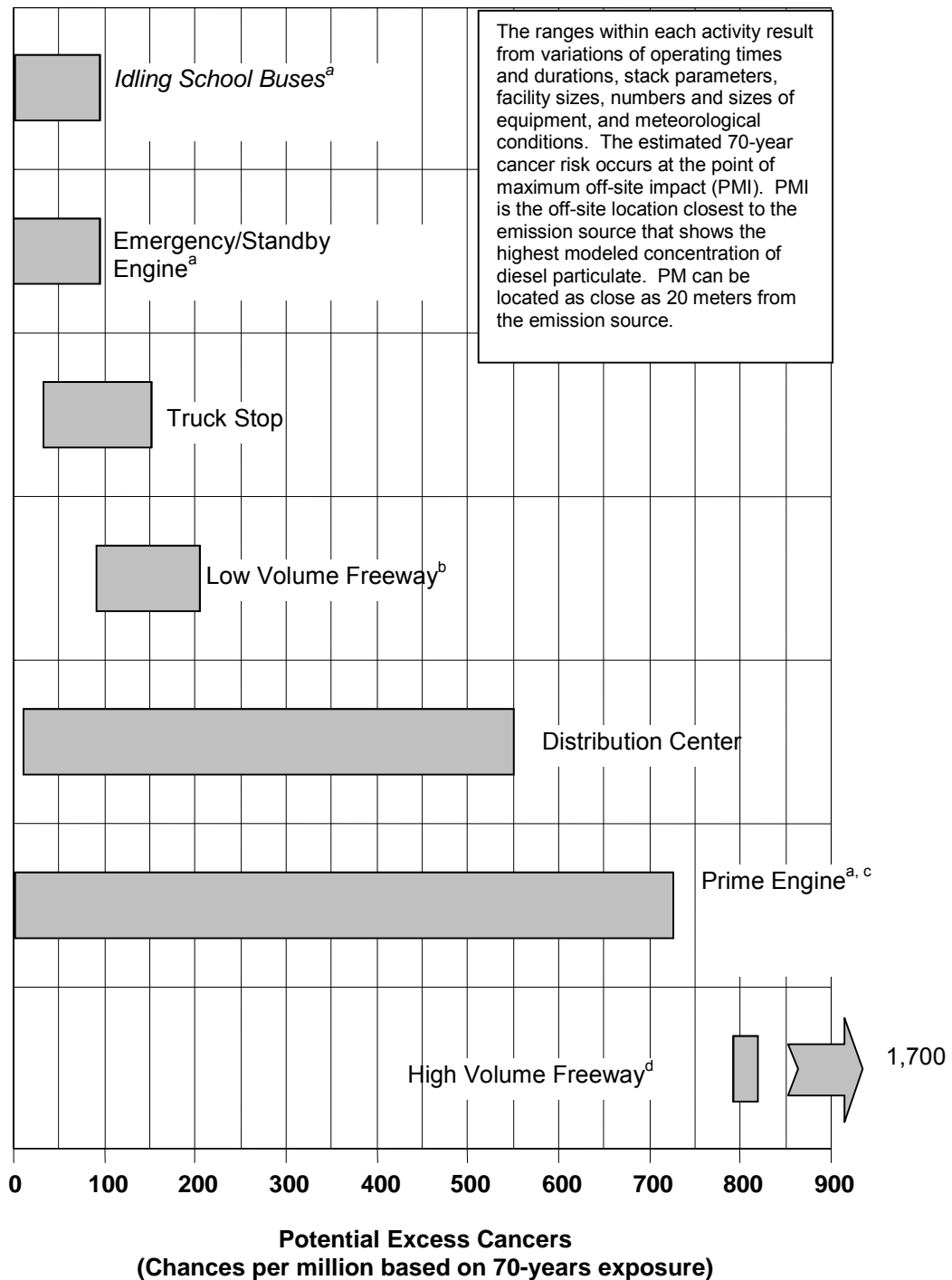
Five categories of facilities with diesel particulate emissions are discussed in more detail below.

■ Rail Yards and Locomotive Repair/Maintenance Facilities

Locomotives can be a significant source of diesel exhaust particulate emissions. In rail yards or at locomotive repair/maintenance facilities, numerous locomotives can operate or idle over an extended period of time. An ARB study underway in 2004 showed the impact of diesel particulate emissions on a neighboring community can be similar to that of a major freeway. Because proposals for new or expanded rail yards or locomotive repair facilities are a rare occurrence, the primary interest in these facilities would be proposals to site new housing, schools, playgrounds, or other sensitive receptor projects in the vicinity of an existing rail yard or repair facility.

⁷ The risk assessment methodologies used in developing Figure 4-1 are consistent with the CAPCOA "Hot Spots" Program Revised 1992 Risk Assessment Guidelines, October 1993. The estimated risks are based on the diesel PM concentration at the point of maximum impact as determined using air dispersion modeling. Meteorological variability is addressed by performing the air dispersion modeling analysis with data from Anaheim and Concord. The modeling results of the completed scenarios are characterized as estimates of potential excess cancer risks in chances per million per microgram of diesel PM in a cubic meter of air over a 70-year lifetime. The estimated 70-year potential cancer risks in Table 4-4 are based on the modeled diesel PM concentrations at the point of maximum impact (PMI). Potential cancer risk is calculated by multiplying the annual average concentration for inhalation.

Figure 4-1: Potential Cancer Risk Range of Activities Using Diesel-Fueled Engines As Presented in ARB's Diesel Risk Reduction Plan



^a Emissions from idling school buses, prime engines and emergency standby engines will be reduced due to airborne toxic control measures adopted by the ARB.

^b Low volume freeway risk is based on traffic of 2,000 heavy-duty diesel trucks per day.

^c Prime engines are stationary diesel engines that are not emergency standby engines.

^d High volume freeway risk is based on traffic of 20,000 heavy-duty diesel trucks per day.

■ **Intermodal Transport Facilities and Ports**

Intermodal transport facilities are used to transfer freight and goods from one type of transportation to another, such as from trains onto trucks, or from ports onto trains. These facilities can have heavy-duty diesel truck traffic and other diesel-emitting equipment, such as cranes and forklifts. The air pollution impacts of the increases in trucking and rail activity in and around these facilities are not subject to permits by local air districts and should be addressed through the CEQA process. The magnitude of increases in risk depends on operational parameters such as the numbers of trucks, marine vessels, locomotives, and associated equipment. Mitigation measures may include: setbacks between the facility and sensitive individuals, facility operating procedures that minimize truck and locomotive idling times at the facility, and restrictions on parking or idling trucks waiting to enter the facility.

Port facilities that have a wide array of equipment, including marine vessels, cranes, harbor craft, bulk material handling equipment, fumigation facilities, trains, and heavy-duty trucks can have an air quality impact on the surrounding area. Much of the mobile source activity occurring at ports is not subject to local air district permits, but some mobile source activity may be subject to local air district requirements. Port activities not covered by local air district permits or requirements can be addressed through the CEQA process. The types of projects that would be included in this category are port expansion projects and the siting of sensitive receptor projects in the vicinity of a major port.

■ **Major Truck Stops and Distribution Facilities**

There is a potential for significant risk from diesel particulate matter at facilities that attract large numbers of diesel-fueled vehicles, including major truck stops, warehouses, and distribution centers. Such facilities can typically handle hundreds of heavy-duty trucks per day, but lesser numbers of trucks may still have localized impacts. The range of cancer health risk associated with truck stops and distribution centers is shown in Figure 4-1. In particular, large distribution centers can have large near source impacts. Mitigation measures may include: setbacks between the facility and areas where sensitive individuals are located, operating procedures that minimize truck idling at the facility, and restrictions on parking or idling trucks waiting to enter the facility.

■ **Cold Storage Facilities**

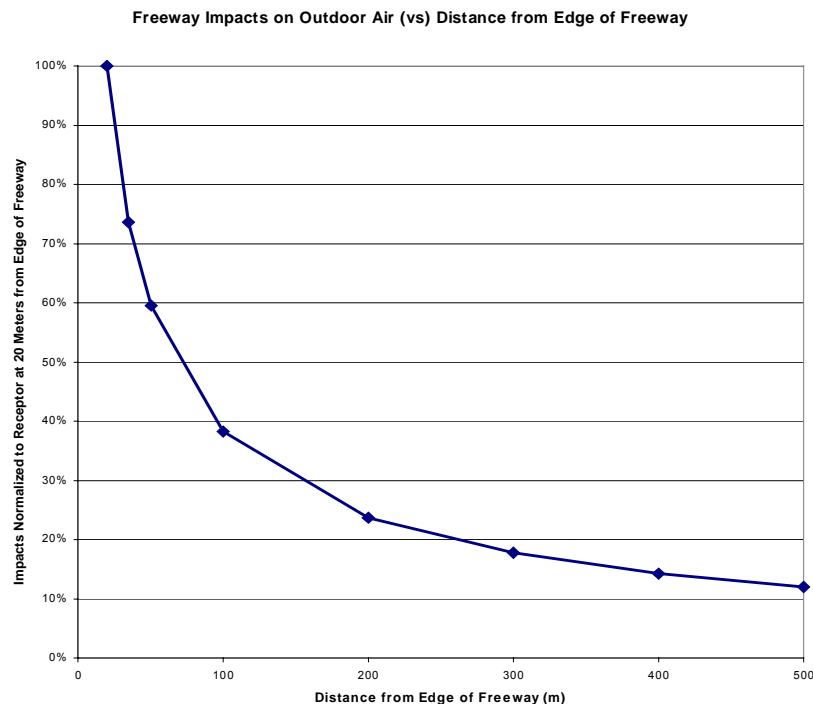
Cold storage distribution centers are of special interest because they attract large numbers of diesel trucks, many of which have transport refrigeration units (TRUs) to maintain climate control for perishable material. Cold storage distribution centers have the potential for higher emissions than standard warehouses or distribution centers because in addition to the increase in diesel truck traffic, auxiliary diesel engines must be run to maintain the temperature in the trailers and shipping containers.

Having a large number of diesel trucks or TRUs operating on a routine basis at a facility can create a local air pollution problem for sensitive individuals living nearby. The ARB has recently adopted a statewide control measure to reduce diesel particulate matter from TRUs and is developing a control measure to limit truck idling. Even with these measures, there still may be localized impacts because of the large concentration of TRUs and idling trucks at a particular location. Because the potential localized impact of emissions from diesel trucks and TRUs should be evaluated in the land use decision making process, the ARB will be developing a supplement to this Handbook to provide additional information on evaluating these facilities.

■ Freeways or Other Busy Traffic Corridors

This situation will most likely arise in the context of siting a project frequented by sensitive individuals near a freeway or other busy traffic corridor. In this instance, freeways and busy traffic corridors are defined as traffic volume of over

Figure 4-2 – Decrease In Concentration of Freeway Diesel Particulate Emissions With Distance



100,000 vehicles per day in urban areas and 50,000 vehicles per day in rural areas (Education Code Section 17213). Roadways with a high volume of heavy-duty diesel trucks (over 20,000 trucks per day) can also have a significant impact even though the overall vehicle traffic may be lower. ARB studies show that air pollution levels can be significantly higher within 500 feet (150 meters) of freeways or other busy traffic corridors, but begin to return to around background levels within around 1000 feet (300 meters). The range of cancer risk associated with freeways and busy traffic corridors is shown in Figure 4-1.

Figure 4-2 shows the relative impact of freeway emissions on outdoor air concentrations of diesel exhaust particulate at various downwind distances from a freeway (i.e. relative to concentrations at 20 meters from the edge of the traffic lanes). This table was developed from a hypothetical air modeling scenario based on the dispersion of emissions from a six-lane, high-volume freeway. In Figure 4-2, the 100% value represents the diesel particulate concentration experienced by a person standing 20 meters from the edge of the freeway traffic lanes. The remaining diesel particulate concentrations are normalized to the annual average concentration at increasing distance from the freeway. This figure does not depict air pollution risk or exposure. It is intended to show a hypothetical example of how exposure drops off with distance from a roadway. Generally, other sources of ground level air pollution display a similar drop in concentration with distance as that shown in Figure 4-2.

The key lesson from Figure 4-2 is that the freeway air pollution impacts decrease rapidly as you move away from the freeway. In this hypothetical example, particulate concentrations decrease by over 60% within the first 100 meters. Because this table is based on a generalized analysis, these results should be used for screening purposes only. To support site-specific decisions, it would be necessary to perform an analysis that is representative of the specific site. This may involve utilizing modeling inputs collected at the actual location, such as freeway dimensions, distances to sensitive sites, hourly truck volume, hourly total motor vehicle volume, and site-specific meteorological data.

Sources of Other Toxic Air Contaminants

■ Chrome Plating Facilities

It is not advisable to site chrome plating facilities near homes, schools or other areas frequented by the public or vice versa. Chrome electroplating facilities emit hexavalent chromium (chromium VI) which is a very potent carcinogen. In addition to chrome electroplating facilities, thermal chrome plating processes, such as flame spraying, coating operations using hexavalent chromium primer, and certain types of welding operations also have the potential to release hexavalent chromium. Breathing air that contains even very low amounts of hexavalent chromium for long periods of time may lead to increased cancer risk.

Hexavalent chromium emissions are of particular concern when chrome-plating businesses are located near places frequented by the public, such as residential neighborhoods and schools. While chrome plating facilities must meet stringent emission control requirements, ARB investigations during the development of the 1988 ATCM and in recent studies in the San Diego community of Barrio Logan and in the South Coast Air Basin, indicate that there may still be a substantial risk from hexavalent chromium in the vicinity near some facilities. Additional analyses should be conducted when proposed projects could result in placing platers within 500 feet of sensitive sites or vice versa.

While the screening distances for chrome platers presented in Table 4-3 represent general statewide assumptions, some local air districts have also conducted analyses using specific local conditions and criteria. Table 4-4 presents data provided by the South Coast Air Quality Management District and shows plating activity (as measured by the annual current usage) and the corresponding distances needed to keep the air pollution risk to less than

Table 4-4
SCAQMD Chrome Plating Screening Table
 (Cancer Risk of Less Than 25 in a Million)

Maximum Current Usage Per Year	
Distance to Nearest Receptor	<u>Ampere-Hours/Year</u>
25 m	564,000
50 m	1,420,000
75 m	2,683,000
100 m	4,352,000

Assumptions:

Decorative chrome plating facility without any ventilation system
 Controlled by a certified fume suppressant (>95% efficiency)
 Building area: >3000 square feet to 10,000 square feet
 Building height: >20 feet
 West Los Angeles meteorological conditions
 Chromic acid concentration is typically 30 - 35 ounces/gallon
 Applicable to plating tanks operating <12 hours/day

25 potential cancers in a million. The distances are based on several assumptions including region specific meteorology, controls, type of ventilation systems, and duration of operation. The measure of chrome plating activity used in Table 4-4 is ampere-hours per year. Ampere-hours is the amount of electrical current applied to the electroplating tank and is directly related to the level of chrome plating activity. The range of ampere-hours shown in Table 4-4 are representative of small to large chrome plating facilities.

■ **Dry Cleaners**

Dry cleaners that use the cleaning solvent perchloroethylene are subject to strict emission control requirements to reduce exposure of this potential human carcinogen to the public. Even so, a dry cleaner in close proximity to a sensitive site or located in a residential building (co-located facility), may still present a significant potential cancer risk to people near-by. In the South Coast Air Basin, the use of this dry cleaning solvent is being phased out altogether. In the development of their dry cleaning regulation, the South Coast Air Quality Management District conducted an analysis of dry cleaners in their region.

Based on the information gathered and general assumptions about the sources in the Basin, the District calculated a maximum perchloroethylene usage (in gallons used per month) and a corresponding distance needed to keep the air pollution health risk to less than 25 potential cancers in a million. This is presented in Table 4-5.

Table 4-5
SCAQMD Dry Cleaning Perchloroethylene Screening Levels
 (Cancer Risk of Less Than 25 in a Million)

Maximum Perchloroethylene Per Year	
Distance to Nearest Receptor	Gallons per month
25 m	2.5
50 m	6.8
75 m	14.0
100 m	24.0

Assumptions:

50% material recycled

West Los Angeles meteorological conditions

Building dimensions – 40 feet x 40 feet x 15 feet (height)

General ventilation with 60% capture efficiency

A dry cleaning machine with primary and secondary controls

Some mitigation options include having the dry cleaning performed at an off-site facility or using environmentally friendly dry cleaning options that do not use perchloroethylene. Another potential approach is to adopt zoning requirements that prevent siting of dry cleaners near homes or in or near residential buildings. Special attention should also be paid to proposals to site homes or apartments near existing large dry cleaning facilities or where there are several dry cleaners nearby.

New York City has done testing at co-located facilities that indicated elevated exposures to perchloroethylene at these locations. The San Francisco Bay Area dry cleaning industry is similar to that of New York City and has co-located facilities, including an appreciable concentration in San Francisco. The Bay Area Air Quality Management District, which serves a nine-county region in the San Francisco Bay Area, has studied the potential risk from co-located facilities and requires them to install vapor barrier rooms and use dry cleaning machines equipped with secondary control.

■ Large Gasoline Stations

Service stations are commonplace in almost every community in the State. However, gasoline contains several toxic substances, including benzene. The ARB has adopted many regulations that have significantly reduced the health risk from gasoline and service stations, including cleaner burning gasoline and the requirement for vapor recovery systems. While the risk from service stations has

been reduced, and will be further reduced in the near future with more stringent vapor recovery requirements, some of the very largest gasoline stations may present a health risk of concern if located near sensitive individuals. These very large stations are those that sell more than 2.5 million gallons of gasoline a year and represent about five percent of all stations in the State.

Odor and Dust Considerations

Other air pollution considerations include the potential for a facility to release odors or generate dust. Because odors are the most common source of air pollution complaints from residents, they should also be considered in the project review process. In addition to being an annoyance, odors can exacerbate underlying medical conditions and cause stress-induced illness.

Table 4-6 lists some of the top sources of odor complaints received by local air pollution control agencies. One way to minimize odor complaint problems is allowing for adequate buffer areas between new odor sources and the public or between new public facilities and existing odor sources. It should also be noted that many of the facilities in Table 4-6 also have the potential to emit toxic air pollutants in addition to the odor considerations (see Table 4-2).

Sources of dust are also a common source of air pollution-related complaints from the public.

Operations that sometimes result in dust complaints are rock crushing, sand and gravel operations, stone

quarrying, and mining operations. Zoning or siting decisions should include consideration of appropriate setbacks or other mitigation that can minimize dust impacts on residential areas or other areas where sensitive individuals are likely to be present.

**Table 4-6
Sources of Odor Complaints**

- Sewage Treatment Plants
- Landfills
- Recycling Facilities
- Waste Transfer Stations
- Petroleum Refineries
- Biomass Operations
- Autobody Shops
- Coating Operations
- Fiberglass Manufacturing
- Foundries
- Rendering Plants
- Livestock Operations

Table 4-7
References For Selected Source Categories

Source Category	References Available
Rail Yards	<ul style="list-style-type: none"> • Air Resources Board, preliminary analysis, final report anticipated in 2004.
Intermodal Facilities	<ul style="list-style-type: none"> • Air Resources Board, preliminary analysis, final report anticipated in 2005.
Ports	<ul style="list-style-type: none"> • Air Resources Board, preliminary analysis, final report anticipated in 2005.
Freeway, Busy Traffic Corridor, or Roadway with Heavy Diesel Truck Traffic	<ul style="list-style-type: none"> • Air Resources Board, <i>Risk Reduction Plan to Reduce Particulate Matter from Diesel-Fueled Engines and Vehicles</i>, October 2000, Appendix VII. • Section 17213 of the Education Code (Senate Bill 352, Escutia, 2003).
Truck Stop	<ul style="list-style-type: none"> • Air Resource Board, <i>Risk Reduction Plan to Reduce Particulate Matter from Diesel-Fueled Engines and Vehicles</i>, October 2000, Appendix VII.
<u>Cold Storage Distribution Center</u>	<ul style="list-style-type: none"> • Air Resources Board, <i>Risk Reduction Plan to Reduce Particulate Matter from Diesel-Fueled Engines and Vehicles</i>, October 2000, Appendix VII. • Air Resources Board, Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate, October 2003. • South Coast Air Quality Management District, Mira Loma Study: Analysis of the Impact of Diesel Particulate Emissions from Warehouse/Distribution Center Operations, 2002.
Chrome Platers	<ul style="list-style-type: none"> • Air Resources Board, Hexavalent Chromium Airborne Toxic Control Measure for Chrome Plating and Chromic Acid Anodizing Operations, 1988. • Air Resources Board, Emissions Testing Program, Source Test Reports, Phase I, 2003. • Air Resources Board, Ambient Air Monitoring for Hexavalent Chromium and Metals in Barrio Logan: May 2001 through May 2002, dated October 14, 2003. • South Coast Air Quality Management District, Chrome Plating Screening Levels, 2004.
Dry Cleaners	<ul style="list-style-type: none"> • California Air Pollution Control Officers

Source Category	References Available
	<p>Association, DRAFT <i>Industry-wide Risk Assessment Guidelines for Perchloroethylene Dry Cleaners</i>, November 2002.</p> <ul style="list-style-type: none"> • Air Resources Board, Perchloroethylene Airborne Toxic Control Measure (ATCM) -- Dry Cleaning Operations, 1994. • South Coast Air Quality Management District, Dry Cleaning Perc Screening Levels, 2004.
Large Gasoline Stations	<ul style="list-style-type: none"> • California Air Pollution Control Officers Association, <i>Industry-wide Risk Assessment Guidelines for Gasoline Service Stations</i>, December 1997 (risk tables revised 11/01/01).

5. How will the actions taken by ARB and local air districts to improve air quality complement the land use decision-making process?

ARB's regulatory programs reduce air pollutant emissions through statewide strategies that improve public health in all California communities. ARB's overall program addresses motor vehicles, consumer products, air toxics, air-quality planning, research, education, enforcement, and air monitoring. Community health and environmental justice concerns are a consideration in all these programs. ARB's programs are statewide but recognize that extra efforts may be needed in some communities due to historical mixed land-use patterns, limited participation in public processes in the past, and a greater concentration of air pollution sources in some communities.

ARB's strategies are intended to result in better air quality and reduced health risk to residents throughout California. The ARB's priority is to prevent or reduce the public's exposure to air pollution, including from toxic air contaminants that pose the greatest risk, particularly to infants and children who are more vulnerable to air pollution.

In October 2003, ARB updated its statewide control strategy to reduce emissions from source categories within its regulatory authority. A primary focus of the strategy is to achieve federal and State air quality standards for ozone and particulate matter throughout California, and to reduce health risk from diesel particulate matter. Along with local air districts, ARB will continue to address air toxics emissions from regulated sources (see Table 5-1 for a summary of ARB activities). As indicated earlier, ARB will also provide analytical tools and information to land use agencies and local air districts to help assess and mitigate cumulative air pollution impacts.

The ARB will continue to consider the adoption of or revisions to needed air toxics control measures as part of the State's ongoing air toxics assessment program.⁸

As part of its effort to reduce particulate matter and air toxics emissions from diesel PM, the ARB has developed a Diesel Risk Reduction Program⁹ that lays out several strategies in a three-pronged approach to reduce emissions and their associated risk:

- Stringent emission standards for all new diesel-fueled engines;
- Aggressive reductions from in-use engines; and
- Low sulfur fuel that will reduce PM and still provide the quality of diesel fuel needed to control diesel PM.

⁸ For continuing information and updates on State measures, the reader can refer to ARB's website at <http://www.arb.ca.gov/toxics/control.htm>.

⁹ For a comprehensive description of the program, please refer to ARB's website at <http://www.arbB.ca.gov/diesel/dieselrrp.htm>.

**Table 5-1
ARB ACTIONS TO ADDRESS
CUMULATIVE AIR POLLUTION IMPACTS IN COMMUNITIES**

Information Collection

- Improve emission inventories, air monitoring data, and analysis tools that can help to identify areas with high cumulative air pollution impacts
- Conduct studies in coordination with OEHHA on the potential for cancer and non-cancer health effects from air pollutants emitted by specific source categories
- Establish web-based clearinghouse for land use strategies implemented at the local level

Emission Reduction Approaches (2004-2006)*

- Through a public process, consider development and/or amendment of regulations and related guidance to reduce emissions, exposure, and health risk at a statewide and local level for the following sources:
 - Diesel PM sources such as stationary diesel engines, transport refrigeration units, portable diesel engines, on-road public fleets, off-road public fleets, heavy-duty diesel truck idling, harbor craft vessels, waste haulers
 - Other air toxics sources, such as formaldehyde in composite wood products, hexavalent chromium for chrome plating and chromic acid anodizing, thermal spraying, and perchloroethylene dry cleaning
- Develop technical supplements and/or guidance documents for the following:*
 - Auto painting shops
 - Distribution centers
 - Modeling tools such as HARP and CHAPIS
 - Lead sources/risk management
 - Stationary diesel engines
- Adopt rules and pollution prevention initiatives within legal authority to reduce emissions from mobile sources and fuels, and consumer products
- Develop and maintain Air Quality Handbook as a tool for use by land use agencies and local air districts to address cumulative air pollution impacts

Other Approaches

- Support additional funding for high priority mobile source emission reduction projects

*Because ARB will continue to review the need to adopt or revise statewide measures, the information contained in this chart will be updated on an ongoing basis. For current information, see ARB's website at: (actual URL will be identified in the final document).

A few of the initial diesel risk reduction strategies include measures to reduce emissions from refuse haulers, urban buses, and stationary and portable diesel engines -- sources that are important from a community perspective.¹⁰

¹⁰ The reader can refer to ARB's website for information on its mobile source-related programs at: <http://www.arb.ca.gov/msprog/msprog.htm>.

The ARB will continue to evaluate the health effects of air pollutants while implementing programs with local air districts to reduce air pollution in all California communities.

Local air districts also have ambitious programs to reduce criteria pollutants and air toxics from regulated sources in their region. Many of these programs also benefit air quality in local communities as well as in the broader region. For more information on what is being done in your area to reduce cumulative air pollution impacts through air pollution control programs, you should contact your local air district.¹¹

¹¹ Local air district contacts can be found on the inside cover to this Handbook.

6. How can meaningful public participation and access to information be enhanced?

Community involvement is an important part of the land use process. The public is entitled to the best possible information about the air they breathe and what is being done to prevent or reduce unhealthful air pollution in their communities. In particular, information on how land use decisions can affect air pollution and public health should be made accessible to all communities, including low-income and minority communities.

Effective community participation consistently relies on a free, two-way flow of information – from public agencies to community members about opportunities, constraints, and impacts, and from community members back to public officials about needs, priorities, and preferences. The outreach process needed to build understanding and local neighborhood involvement requires data, methodologies, and formats tailored to the needs of the specific community. More importantly, it requires the strong collaboration of local government agencies that review and approve projects and land uses to improve the physical and environmental surroundings of the local community.

Many land use agencies, especially those in major metropolitan areas, are familiar with, and have a long-established public review process. Nevertheless, public outreach has traditionally been passive, requiring the public to take the initiative in order to participate, and with little effort invested by an agency to actively solicit participation. Many residents are concerned that even when they do participate in a public process, it has little or no impact on the agency's decision. Active public involvement requires engaging the public in ways that do not require their previous interest in or knowledge of the land use or air pollution control requirements, and a commitment to taking action where appropriate to address the concerns that are raised.

Land use agencies and local air districts should consider seeking out the public in places where they are already gathering to provide information on what local government is doing to prevent or reduce health risk from air pollution. The outreach could involve presentations and briefings, distribution of printed information, or staffing an information booth. Agencies can then engage people who would not otherwise come to a formal public meeting about a local land use decision.

Table 6-1 contains some general outreach approaches that might be considered.

Table 6-1
Public Participation Approaches

- Staff and community leadership awareness training on environmental justice programs and community-based issues
- Surveys to identify the website information needs of interested community-based organizations and other stakeholders
- Information materials on local land use and air district authorities
- Community-based councils to facilitate and invite resident participation in the planning process
- Neighborhood CEQA scoping sessions that allows for community input prior to technical analysis
- Public information materials on siting issues are under review including materials written for the affected community, and in different media that widens accessibility
- Public meetings
- Identify other opportunities to include community-based organizations in the process

To improve outreach, local land use agencies should consider the following activities:

- Hold meetings in communities affected by agency programs, policies, and projects at times and in places that encourage public participation, such as evenings and weekends at centrally located community meeting rooms, libraries, and schools.
- Provide childcare services at meetings.
- Assess the need for and provide translation services at public meetings.
- Hold community meetings to update residents on the results of any special air monitoring programs conducted in their neighborhood.
- Hold community meetings to discuss and evaluate the various options to address cumulative impacts in their community.
- In coordination with local air districts, make staff available to attend meetings of community organizations and neighborhood groups to listen to and, where appropriate, act upon community concerns.
- Establish a specific contact person for environmental justice issues.
- Increase student and community awareness of local government land use activities and policies through outreach opportunities.
- Make air quality and land use information available to communities in an easily understood and useful format, including fact sheets, mailings, brochures, public service announcements, and web pages, in English and other languages.
- On the local government web-site, dedicate a page or section to what the land use program is doing regarding environmental justice and cumulative environmental impacts, and, as applicable, activities conducted with local air districts such as neighborhood air monitoring studies, pollution prevention, air pollution sources in neighborhoods, and risk reduction.

- Allow, encourage, and promote community access to land use activities, including public meetings, General Plan or Community Plan updates, zoning changes, special studies, CEQA reviews, variances, etc.
- Distribute information in multiple languages, as needed, on how to contact the land use agency or local air district to obtain information and assistance regarding environmental justice programs, including how to participate in public processes.
- Create and distribute a simple, easy-to-read, and understandable public participation handbook, which may be based on the “Public Participation Guidebook” developed by ARB.

**LAND USE CLASSIFICATIONS AND ASSOCIATED FACILITY CATEGORIES
THAT COULD EMIT AIR POLLUTANTS**

(1) Land Use Classifications – by Activity ⁱ	(2) Facility or Project Examples	(3) Key Pollutants ^{ii,iii}	(4) Air Pollution Permits ^{iv}
COMMERCIAL/ LIGHT INDUSTRIAL: SHOPPING, BUSINESS, AND COMMERCIAL			
▲ Primarily retail shops and stores, office, commercial activities, and light industrial or small business	Dry cleaners; drive-through restaurants; gas stations; auto body shops; metal plating shops; photographic processing shops; textiles; apparel and furniture upholstery; leather and leather products; appliance repair shops; mechanical assembly cleaning; printing shops	VOCs, air toxics, including diesel PM, NOx, CO, SOx	Limited; Rules for applicable equipment
▲ Goods storage or handling activities, characterized by loading and unloading goods at warehouses, large storage structures, movement of goods, shipping, and trucking.	Warehousing; freight-forwarding centers; drop-off and loading areas; distribution centers	VOCs, air toxics, including diesel PM, NOx, CO, SOx	No ^v
LIGHT INDUSTRIAL: RESEARCH AND DEVELOPMENT			
▲ Medical waste at research hospitals and labs	Incineration; surgical and medical instruments manufacturers, pharmaceutical manufacturing, biotech research facilities	Air toxics, NOx, CO, SOx	Yes
▲ Electronics, Electrical Apparatus, Components, and Accessories	Computer manufacturer; integrated circuit board manufacturer; semiconductor production	Air toxics, VOCs	Yes
▲ College or university lab or research center	Medical waste incinerators; lab chemicals handling, storage and disposal	Air toxics, NOx, CO, SOx, PM10	Yes
▲ Research and development labs	Satellite manufacturer; fiber-optics manufacturer; defense contractors; space research and technology; new vehicle and fuel testing labs	Air toxics, VOCs	Yes
▲ Commercial testing labs	Consumer products; chemical handling, storage and disposal	Air toxics, VOCs	Yes

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(1) Land Use Classifications – by Activity ⁱ	(2) Facility or Project Examples	(3) Key Pollutants ^{ii,iii}	(4) Air Pollution Permits ^{iv}
INDUSTRIAL: NON-ENERGY-RELATED			
▲ Assembly plants, manufacturing facilities, industrial machinery	Adhesives; chemical; textiles; apparel and furniture upholstery; clay, glass, and stone products production; asphalt materials; cement manufacturers, wood products; paperboard containers and boxes; metal plating; metal and canned food product fabrication; auto manufacturing; food processing; printing and publishing; drug, vitamins, and pharmaceuticals; dyes; paints; pesticides; photographic chemicals; polish and wax; consumer products; metal and mineral smelters and foundries; fiberboard; floor tile and cover; wood and metal furniture and fixtures; leather and leather products; general industrial and metalworking machinery; musical instruments; office supplies; rubber products and plastics production; saw mills; solvent recycling; shingle and siding; surface coatings	VOCs, air toxics, including diesel PM, NOx, PM, CO, SOx	Yes
INDUSTRIAL: ENERGY AND UTILITIES			
▲ Water and sewer operations	Pumping stations; air vents; treatment	VOCs, air toxics, NOx, CO, SOx, PM10	Yes
▲ Power generation and distribution	Power plant boilers and heaters; portable diesel engines; gas turbine engines	NOx, diesel PM, NOx, CO, SOx, PM10, VOCs	Yes
▲ Refinery operations	Refinery boilers and heaters; coke cracking units; valves and flanges; flares	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Yes
▲ Oil and gas extraction	Oil recovery systems; uncovered wells	NOx, diesel PM, VOCs, CO, SOx, PM10	Yes
▲ Gasoline storage, transmission, and marketing	Above and below ground storage tanks; floating roof tanks; tank farms; pipelines	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Yes
▲ Solid and hazardous waste treatment, storage, and disposal activities.	Landfills; methane digester systems; process recycling facility for concrete and asphalt materials	VOCs, air toxics, NOx, CO, SOx, PM10	Yes
CONSTRUCTION (NON-TRANSPORTATION)			
	Building construction; demolition sites	PM (re-entrained road dust), asbestos, diesel PM, NOx, CO, SOx, PM10, VOCs	Limited; State and federal off-road equipment standards

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(1) Land Use Classifications – by Activity ⁱ	(2) Facility or Project Examples	(3) Key Pollutants ^{ii,iii}	(4) Air Pollution Permits ^{iv}
DEFENSE			
	Ordnance and explosives demolition; range and testing activities; chemical production; degreasing; surface coatings; vehicle refueling; vehicle and engine operations and maintenance	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Limited; prescribed burning; equipment and solvent rules
TRANSPORTATION			
▲ Vehicular movement	Residential area circulation systems; parking and idling at parking structures; drive-through establishments; car washes; special events; schools; shopping malls, etc.	VOCs, NOx, PM (re-entrained road dust) air toxics e.g., benzene, diesel PM, formaldehyde, acetaldehyde, 1,3 butadiene, CO, SOx, PM10	No
▲ Road construction and surfacing	Street paving and repair; new highway construction and expansion	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	No
▲ Trains	Railroads; switch yards; maintenance yards	VOCs, NOx, CO, SOx, PM10, air toxics, including diesel PM	Limited; Applicable State and federal MV standards, and possible equipment rules
▲ Marine and port activities	Recreational sailing; commercial marine operations; hotelling operations; loading and un-loading; servicing; shipping operations; port or marina expansion; truck idling		
▲ Aircraft	Takeoff, landing, and taxiing; aircraft maintenance; ground support activities		
▲ Mass transit and school buses	Bus repair and maintenance		
NATURAL RESOURCES			
▲ Farming operations	Agricultural burning; diesel operated engines and heaters; small food processors; pesticide application; agricultural off-road equipment	Diesel PM, VOCs, NOx, PM10, CO, SOx	Limited ^{vi} ; Agricultural burning requirements, applicable State and federal mobile source standards; pesticide rules
▲ Livestock and dairy operations	Dairies and feed lots	Ammonia, VOCs, PM10	Yes ^{vii}
▲ Logging	Off-road equipment e.g., diesel fueled chippers, brush hackers, etc.	Diesel PM, NOx, CO, SOx, PM10, VOCs	Limited; Applicable State/federal mobile source standards
▲ Mining operations	Quarrying or stone cutting; mining; drilling or dredging	PM10, CO, SOx, VOCs, NOx, and asbestos in	Applicable equipment rules

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(1) Land Use Classifications – by Activity ⁱ	(2) Facility or Project Examples	(3) Key Pollutants ^{ii,iii}	(4) Air Pollution Permits ^{iv}
		some geographical areas	and dust controls
RESIDENTIAL			
Housing	Housing developments; retirement developments; affordable housing	Fireplace emissions (PM10, NOx, VOCs, CO, air toxics); Water heater combustion (NOx, VOCs, CO)	No ^{vii}
ACADEMIC AND INSTITUTIONAL			
▲ Schools, including school-related recreational activities	Schools; school yards; vocational training labs/classrooms such as auto repair/painting and aviation mechanics	Air toxics	Yes/No ^{viii}
▲ Medical waste	Incineration	Air toxics, NOx, CO, PM10	Yes
▲ Clinics, hospitals, convalescent homes		Air toxics	Yes

ⁱ These classifications were adapted from the American Planning Association's "Land Based Classification Standards." The Standards provide a consistent model for classifying land uses based on their characteristics. The model classifies land uses by refining traditional categories into multiple dimensions, such as activities, functions, building types, site development character, and ownership constraints. Each dimension has its own set of categories and subcategories. These multiple dimensions allow users to have precise control over land-use classifications. For more information, the reader should refer to the Association's website at <http://www.planning.org/LBCS/GeneralInfo/>

ⁱⁱ This column includes key criteria pollutants and air toxic contaminants that are most typically associated with the identified source categories.

Additional information on specific air toxics that are attributed to facility categories can be found in ARB's Emission Inventory Criteria and Guidelines Report for the Air Toxics Hot Spots Program (May 15, 1997). This information can be viewed at ARB's web site at <http://www.arb.ca.gov/ab2588/final96/guide96.pdf>.

Criteria air pollutants are those air pollutants for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Criteria pollutants include ozone (formed by the reaction of volatile organic compounds and nitrogen oxides in the presence of sunlight), particulate matter, nitrogen dioxide, sulfur dioxide, carbon monoxide, and lead.

Volatile organic compounds (VOCs) combine with nitrogen oxides to form ozone, as well as particulate matter. VOC emissions result primarily from incomplete fuel combustion and the evaporation of chemical solvents and fuels. On-road mobile sources are the largest contributors to statewide VOC emissions. Stationary sources of VOC emissions include processes that use solvents (such as dry-cleaning, degreasing, and coating operations and petroleum-related processes (such as petroleum refining, gasoline marketing and dispensing, and oil and gas extraction). Areawide VOC sources include consumer products, pesticides, aerosols and paints, asphalt paving and roofing, and other evaporative emissions.

Nitrogen oxides (NOx) are a group of gaseous compounds of nitrogen and oxygen, many of which contribute to the formation of ozone and particulate matter. Most NOx emissions are produced by the combustion of fuels. Mobile sources make up about 80 percent of the total statewide NOx emissions. Mobile sources include on-

road vehicles and trucks, aircraft, trains, ships, recreational boats, industrial and construction equipment, farm equipment, off-road recreational vehicles, and other equipment. Stationary sources of NOx include both internal and external combustion processes in industries such as manufacturing, food processing, electric utilities, and petroleum refining. Areawide source, which include residential fuel combustion, waste burning, and fires, contribute only a small portion of the total statewide NOx emissions, but depending on the community, may contribute to a cumulative air pollution impact.

Particulate matter (PM) refers to particles small enough to be breathed into the lungs (under 10 microns in size). It is not a single substance, but a mixture of a number of highly diverse types of particles and liquid droplets. It can be formed directly, primarily as dust from vehicle travel on paved and unpaved roads, agricultural operations, and construction and demolition.

Carbon monoxide (CO) is a colorless and odorless gas that is directly emitted as a by-product of combustion. The highest concentrations are generally associated with cold stagnant weather conditions that occur during winter. CO problems tend to be localized.

An Air Toxic Contaminant (air toxic) is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. Similar to criteria pollutants, air toxics are emitted from stationary, areawide, and mobile sources. They contribute to elevated regional and localized risks near industrial and commercial facilities and busy roadways. The ten compounds that pose the greatest statewide risk are: acetaldehyde; benzene; 1,3-butadiene; carbon tetrachloride; diesel particulate matter (diesel PM); formaldehyde; hexavalent chromium; methylene chloride; para-dichlorobenzene; and perchloroethylene. The risk from diesel PM is by far the largest, representing about 70 percent of the known statewide cancer risk from outdoor air toxics. The exhaust from diesel-fueled engines is a complex mixture of gases, vapors, and particles, many of which are known human carcinogens. Diesel PM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute about 26 percent of statewide diesel PM emissions, with an additional 72 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and other equipment. Stationary engines in shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations contribute about two percent of statewide emissions. However, when this number is disaggregated to a sub-regional scale such as neighborhoods, the risk factor can be far greater.

ⁱⁱⁱ The level of pollution emitted is a major determinant of the significance of the impact.

^{iv} Indicates whether facilities activities listed in column 4 are generally subject to local air district permits to operate. This does not include regulated products such as solvents and degreasers that may be used by sources that may not require an operating permit per se, e.g., a gas station or dry cleaner.

^v Generally speaking, warehousing or distribution centers are not subject to local air district permits. However, depending on the district, motor vehicle fleet rules may apply to trucks or off-road vehicles operated and maintained by the facility operator. Additionally, emergency generators or internal combustion engines operated on the site may require an operating permit.

^{vi} Authorized by recent legislation SB700.

^{vii} Local air districts do not require permits for woodburning fireplaces inside private homes. However, some local air districts and land use agencies do have rules or ordinances that require new housing developments or home re-sales to install U.S. EPA –certified stoves. Some local air districts also ban residential woodburning during weather inversions that concentrate smoke in residential areas. Likewise, home water heaters are not subject to permits; however, new heaters could be subject to emission limits that are imposed by federal or local agency regulations.

^{viii} Technical training schools that conduct activities normally permitted by a local air district could be subject to an air permit.

LAND USE-BASED REFERENCE TOOLS TO EVALUATE NEW PROJECTS FOR POTENTIAL AIR POLLUTION IMPACTS

Land use agencies generally have a variety of tools and approaches at hand, or accessible from local air districts that can be useful in performing an analysis of potential air pollution impacts associated with new projects. These tools and approaches include:

- Base map of the city or county planning area and terrain elevations.
- General Plan designations of land use (existing and proposed).
- Zoning maps.
- Land use maps that identify existing land uses, including the location of facilities that are permitted or otherwise regulated by the local air district. Land use agencies should consult with their local air district for information on regulated facilities.
- Demographic data, e.g., population location and density, distribution of population by income, distribution of population by ethnicity, and distribution of population by age. The use of population data is a normal part of the planning process. However, from an air quality perspective, socioeconomic data is useful to identify potential community health and environmental justice issues.
- Emissions, monitoring, and risk-based maps created by the ARB or local air districts that show air pollution-related health risk by community across the State.
- Location of public facilities that enhance community quality of life, including parks, community centers, and open space.
- Location of industrial and commercial facilities and other land uses that use hazardous materials, or emit air pollutants. These include chemical storage facilities, hazardous waste disposal sites, dry cleaners, large gas stations, auto body shops, and metal plating and finishing shops.
- Location of sources or facility types that result in diesel on-road and off-road emissions, e.g., stationary diesel power generators, forklifts, cranes, construction equipment, on-road vehicle idling, and operation of transportation refrigeration units. Distribution centers, marine terminals and ports, rail yards, large industrial facilities, and facilities that handle bulk goods are all examples of complex facilities where these types of emission sources are frequently concentrated.¹ Very large facilities, such as ports, marine terminals, and airports, could be analyzed regardless of proximity to a receptor if they are within the modeling area.
- Location and zoning designations for existing and proposed schools, buildings, or outdoor areas where sensitive individuals may live or play.
- Location and density of existing and proposed residential development.
- Zoning requirements, property setbacks or buffer zone policies, traffic flow requirements, and idling restrictions for trucks, trains, yard hostlers², construction equipment, or school buses.
- Traffic counts (including diesel truck traffic counts), within a community to validate or augment existing regional motor vehicle trip and speed data.

¹ The ARB is currently evaluating the types of facilities that may act as complex point sources and developing methods to identify them.

² Yard hostler means a tractor less than 300 horsepower that is used to transfer semi-truck or tractor-trailer containers in and around storage, transfer, or distribution yards or areas and is often equipped with a hydraulic lifting fifth wheel for connection to trailer containers.

ARB AND LOCAL AIR DISTRICT INFORMATION AND TOOLS CONCERNING CUMULATIVE AIR POLLUTION IMPACTS

It is the ARB's policy to support research and data collection activities toward the goal of reducing cumulative air pollution impacts. These efforts include updating and improving the air toxics emissions inventory, performing special air monitoring studies in specific communities, and conducting a more complete assessment of non-cancer health effects associated with air toxics and criteria pollutants.¹ This information is important because it helps us better understand links between air pollution and the health of sensitive individuals -- children, the elderly, and those with pre-existing serious health problems affected by air quality.

ARB is working with CAPCOA and OEHHA to improve air pollutant data and evaluation tools to determine when and where cumulative air pollution impacts may be a problem. The following provides additional information on this effort.

How are emissions assessed?

Detailed information about the sources of air pollution in an area is collected and maintained by local air districts and the ARB in what is called an emission inventory. Emission inventories contain information about the nature of the business, the location, type and amount of air pollution emitted, the air pollution-producing processes, the type of air pollution control equipment, operating hours, and seasonal variations in activity. Local districts collect emission inventory data for most stationary source categories.

Local air districts collect air pollution emission information directly from facilities and businesses that are required to obtain an air pollution operating permit. Local air districts use this information to compile an emission inventory for areas within their jurisdiction. The ARB compiles a statewide emission inventory based on the information collected by the ARB and local air districts. Local air districts provide most of the stationary source emission data, and ARB provides mobile source emissions as well as some areawide emission sources such as consumer products and paints. ARB is also developing map-based tools that will display information on air pollution sources.

Criteria pollutant data have been collected since the early 1970's, and toxic pollutant inventories began to be developed in the mid-1980's.

¹ A criteria pollutant is any air pollutant for which EPA has established a National Ambient Air Quality Standard or for which California has established a State Ambient Air Quality Standard, including: carbon monoxide, lead, nitrogen oxides, ozone, particulates and sulfur oxides. Criteria pollutants are measured in each of California's air basins to determine whether the area meets or does not meet specific federal or State air quality standards. Air toxics or air toxic contaminants are listed pollutants recognized by California or EPA as posing a potential risk to health.

How is the toxic emission inventory developed?

Emissions data for toxic air pollutants is a high priority for communities because of concerns about potential health effects. Most of ARB's air toxics data is collected through the toxic "hotspots" program. Local air districts collect emissions data from industrial and commercial facilities. Facilities that exceed health-based thresholds are required to report their air toxics emissions as part of the Toxic Hot Spots program and update their emissions data every four years. Facilities are required to report their air toxics emissions data if there is an increase that would trigger the reporting threshold of the hotspots program. Air toxics emissions from motor vehicles and consumer products are estimated by the ARB. These estimates are generally regional in nature, reflecting traffic and population.

The ARB also maintains chemical speciation profiles that can be used to estimate toxics emissions when no toxic emissions data is available.

What additional toxic emissions information is needed?

In order to assess cumulative air pollution impacts, updated information from individual facilities is needed. Even for sources where emissions data are available, additional information such as the location of emissions release points is often needed to better model cumulative impacts. In terms of motor vehicles, emissions data are currently based on traffic models that only contain major roads and freeways. Local traffic data are needed so that traffic emissions can be more accurately assigned to specific streets and roads. Local information is also needed for off-road emission sources, such as ships, trains, and construction equipment. In addition, hourly maximum emissions data are needed for assessing acute air pollution impacts.

What work is underway?

ARB is working with CAPCOA to improve toxic emissions data, developing a community health air pollution information system to improve access to emission information, conducting neighborhood assessment studies to better understand toxic emission sources, and conducting surveys of sources of toxic pollutants.

How is air pollution monitored?

While emissions data identify how much air pollution is going into the air, the State's air quality monitoring network measures air pollutant levels in outdoor air. The statewide air monitoring network is primarily designed to measure regional exposure to air pollutants, and consists of more than 250 air monitoring sites.

The air toxics monitoring network consists of approximately twenty permanent sites. These sites are supplemented by special monitoring studies conducted by ARB and local air districts. These sites measure approximately sixty toxic air pollutants. Diesel PM, which is the major driver of urban air toxic risk, is not monitored directly. Ten of the

sixty toxic pollutants, not including diesel, account for most of the remaining air pollution cancer risk in California urban areas.

What additional monitoring has been done?

Recently, additional monitoring has been done to look at air quality at the community level. ARB's community monitoring was conducted in six communities located throughout the State. Most sites were in low-income, minority communities located near major sources of air pollution, such as refineries or freeways. The monitoring took place for a year or more in each community, and included measurements of both criteria and toxic pollutants.

What is being learned from community monitoring?

In some cases, the ARB or local air districts have performed air quality monitoring or modeling studies covering a particular region of the State. When available, these studies can give information about regional air pollution exposures.

The preliminary results of ARB's community monitoring are providing insights into air pollution at the community level. Urban background levels are a major contributor to the overall risk from air toxics in urban areas, and this urban background tends to mask the differences between communities. When localized elevated air pollutant levels were measured, they were usually associated with local ground-level sources of toxic pollutants. The most common source of this type was busy streets and freeways. The impact these ground-level sources had on local air quality decreased rapidly with distance from the source. Pollutant levels usually returned to urban background levels within a few hundred meters of the source.

These results indicate that tools to assess cumulative impacts must be able to account for both localized, near-source impacts, as well as regional background air pollution. The tools that ARB is developing for this purpose are air quality models.

How can air quality modeling be used?

While air monitoring can directly measure cumulative exposure to air pollution, it is limited because all locations cannot be monitored. To address this, air quality modeling provides the capability to estimate exposure when air monitoring is not feasible. Air quality modeling can be refined to assess local exposure, identify locations of potential hot spots, and identify the relative contribution of emission sources to exposure at specific locations. The ARB has used this type of information to develop regional cumulative risk maps that estimate the cumulative cancer air pollution risk for most of California. While these maps only show one air pollution-related health risk, it does provide a useful starting point.

What is needed for community modeling?

Air quality models have been developed to assess near-source impacts, but they have very exacting data requirements. These near-source models estimate the impact of local sources, but do not routinely include the contribution from regional air pollution background. To estimate cumulative air pollution exposure at a neighborhood scale, a modeling approach needs to combine features of both micro-scale and regional models.

In addition, improved methods are needed to assess near-source impacts under light and variable wind conditions, when high local concentrations are more likely to occur. A method for modeling long-term exposure to air pollutants near freeways and other high traffic areas is also needed.

What modeling work has ARB developed?

A key component of ARB's Community Health Program is the Neighborhood Assessment Program (NAP). As described later in this section, the NAP studies are being conducted to better understand pollution impacts at the community level. Through two such studies conducted in Barrio Logan (San Diego) and Wilmington (Los Angeles), ARB is refining community-level modeling methodologies. Regional air toxics modeling is also being performed to better understand regional air pollution background levels.

In a parallel effort, ARB is developing modeling protocols for estimating cumulative emissions, exposure, and risk from air pollution. The protocols will cover modeling approaches and uncertainties, procedures for running the models, the development of statewide risk maps, and methods for estimating health risks. The protocols are subject to an extensive peer review process prior to release.

How are air pollution impacts on community health assessed?

On a statewide basis, ARB's toxic air contaminant program identifies and reduces public exposure to air toxics. The focus of the program has been on reducing cancer risk, because monitoring results show urban cancer risk levels are too high. ARB has also looked for potential non-cancer risks based on health reference levels provided by OEHHA. On a regional basis, the pollutants measured in ARB's toxic monitoring network are generally below the OEHHA non-cancer reference exposure levels.

As part of its community health program, the ARB is looking at cancer and non-cancer risk. This could include chronic or acute health effects. If the assessment work shows elevated exposures on a localized basis, ARB will work with OEHHA to assess the health impacts.

What tools has ARB developed to assess cumulative air pollution impacts?

ARB has developed the following tools and reports to assist land use agencies and local air districts assess and reduce cumulative emissions, exposure, and risk on a neighborhood scale.

Statewide Risk Maps

ARB has produced regional risk maps that show the statewide trends for Southern and Central California in estimated inhalation cancer risk from air toxics between 1990 and 2010.² These maps will supplement U.S. EPA's ASPEN model and are available on the ARB's Internet site. These maps are best used to obtain an estimate of the regional background air pollution health risk and are not detailed enough to estimate the exact risk at a specific location.

ARB also has maps that focus in more detail on smaller areas that fall within the Southern and Central California regions for these same modeled years. The finest visual resolution available in the maps on this web site is 2 kilometers by 2 kilometers. These maps are not detailed enough to assess individual neighborhoods or facilities.

Community Health Air Pollution Information System (CHAPIS)

CHAPIS is an internet-based procedure for displaying information on emissions from sources of air pollution in an easy to use mapping format. CHAPIS uses Geographical Information System (GIS) software to deliver interactive maps over the Internet. CHAPIS relies on emission estimates reported to the ARB's emission inventory database – California Emissions Inventory Development and Reporting System, or CEIDARS.

Through CHAPIS, land use planners and air district staff can quickly and easily identify pollutant sources and emissions within a specified area. CHAPIS contains information on air pollution emissions from selected large facilities and small businesses that emit criteria and toxic air pollutants. It also contains information on air pollution emissions from motor vehicle and areawide emissions. CHAPIS does not contain information on every source of air pollution or every air pollutant. It is a major long-term objective of CHAPIS to include all of the largest air pollution sources and those with the highest documented air pollution risk. CHAPIS will be updated on a periodic basis and additional facilities will be added to CHAPIS as more data becomes available.

CHAPIS is being developed in stages to assure data quality. The initial release of CHAPIS will include facilities emitting 10 or more tons per year of nitrogen oxides, sulfur dioxide, carbon monoxide, PM10, or reactive organic gases; air toxics from refineries

²ARB maintains State trends and local cancer risk maps that show statewide trends in estimated inhalable cancer risk from air toxics between 1990 and 2010. This information can be viewed at ARB's web site at <http://www.arb.ca.gov/toxics/cti/hlthrisk/hlthrisk.htm>

and power plants of 50 megawatts or more; and facilities that conducted health risk assessments under the California “Hot Spots” program³ for specific source categories.

CHAPIS can be used by land use agencies to identify the contribution from mobile, area, and point sources on the air quality of that community.

“Hot Spots” Analysis and Reporting Program (HARP)

HARP⁴ is a software package available from the ARB and is designed with air quality professionals in mind. It models emissions and releases data from one or more facilities to estimate the potential health risk posed by the selected facilities on the neighboring community. HARP uses the latest risk assessment guidelines published by OEHHA.

With HARP, a user can perform the following tasks:

- Create and manage facility databases;
- Perform air dispersion modeling;
- Conduct health risk analyses;
- Output data reports; and
- Output results to GIS mapping software.

HARP can model downwind concentrations of air toxics based on the calculated emissions dispersion at a single facility. HARP also has the capability of assessing the risk from multiple facilities, and for multiple locations of concern near those facilities. While HARP has the capability to assess multiple source impacts, there had been limited application of the multiple facility assessment function in the field at the time of HARP’s debut in 2003. HARP can also evaluate multi-pathway, non-inhalation health risk resulting from air pollution exposure, including skin and soil exposure, and ingestion of meat and vegetables contaminated with air toxics, and other toxics that have accumulated in a mother’s breast milk.

Neighborhood Assessment Program (NAP)

The NAP is a key component of ARB’s Community Health Program. It includes the development of tools that can be used to perform assessments of cumulative air pollution impacts on a neighborhood scale. The NAP studies are being conducted to better understand how air pollution affects individuals at the neighborhood level. Thus far, ARB has conducted neighborhood scale assessments in Barrio Logan and Wilmington.

³ “Hot Spots” program will be defined in the glossary.

⁴ More detailed information can be found on ARB’s website at:
<http://www.arb.ca.gov/toxics/harp/harp.htm>

As part of these studies, ARB is collecting data and developing a modeling protocol that can be used to conduct cumulative air pollution impact assessments. Initially these assessments will focus on cumulative inhalation cancer health risk and chronic non-cancer impacts. The major challenge is developing modeling methods that can combine both regional and localized air pollution impacts, and identifying the critical data necessary to support these models. The objective is to develop methods and tools from these studies that can ultimately be applied to other areas of the State. In addition, the ARB plans to use these methods to replace the ASPEN regional risk maps currently posted on the ARB Internet site.

Urban Emissions Model (URBEMIS) is a computer program that can be used to estimate emissions associated with land development projects in California such as residential neighborhoods, shopping centers, office buildings, and construction projects. URBEMIS uses emission factors available from the ARB to estimate vehicle emissions associated with new land uses. URBEMIS⁵ estimates sulfur dioxide emissions from motor vehicles in addition to reactive organic gases, nitrogen oxides, carbon monoxide, and PM10.

Land-Use Air Quality Linkage Report⁶

This report summarizes data currently available on the relationships between land use, transportation and air quality. It also highlights strategies that can help to reduce the use of the private automobile. It also briefly summarizes two ARB-funded research projects. The first project analyzes the travel patterns of residents living in 5 higher density, mixed use neighborhoods in California, and compares them to travel in more auto-oriented areas. The second study correlates the relationship between travel behavior and community characteristics, such as density, mixed land uses, transit service, and accessibility for pedestrians.

⁵ For more information on this model, please refer to ARB's website at <http://www.arb.ca.gov/html/soft.htm>.

⁶ To access this report, please refer to ARB's website or click on: <http://www.arb.ca.gov/ch/programs/link97.pdf>

LAND USE AND AIR QUALITY AGENCY ROLES IN THE LAND USE PROCESS

A wide variety of federal, State, and local government agencies are responsible for regulatory, planning, and siting decisions that can have an impact on air pollution. They include local land use agencies, regional councils of government, school districts, local air districts, ARB, the California Department of Transportation (Caltrans), and the Governor's Office of Planning and Research (OPR) to name a few. This Section will focus on the roles and responsibilities of local and State agencies. The role of school districts will be discussed in Appendix E.

Local Land Use Agencies

Under the State Constitution, land use agencies have the primary authority to plan and control land use.¹ Each of California's incorporated cities and counties are required to adopt a comprehensive, long-term General Plan.²

The General Plan's long-term goals are into action through zoning ordinances. These are local laws adopted by counties and cities that describe for specific areas the kinds of development that will be allowed within their boundaries.

Land use agencies are also the lead for doing environmental assessments under CEQA for new projects that may pose a significant environmental impact, or for new or revised General Plans.

Councils of Government (COG)

COGs are organizations composed of local counties and cities that serve as a focus for the development of sound regional planning, including plans for transportation, growth management, hazardous waste management, and air quality. They can also function as the metropolitan planning organization for coordinating the region's transportation programs.

Local Air Districts

Under State law, air pollution control districts or air quality management districts (local air districts) are the local government agencies responsible for improving air quality and are generally the first point of contact for resolving local air pollution issues or complaints. There are 35 local air districts in California³ that have authority and primary

¹ The legal basis for planning and land use regulation is the "police power" of the city or county to protect the public's health, safety and welfare. The California Constitution gives cities and counties the power to make and enforce all local police, sanitary and other ordinances and regulations not in conflict with general laws. State law reference: California Constitution, Article XI §7.

² OPR General Plan Guidelines, 2003:

http://www.opr.ca.gov/planning/PDFs/General_Plan_Guidelines_2003.pdf

³ Contact information for local air districts in California is listed in the front of this Handbook.

responsibility for regional clean air planning. Local air districts regulate stationary sources of air pollutants within their jurisdiction including but not limited to industrial and commercial facilities, power plants, construction activities, outdoor burning, and other non-mobile sources of air pollution. Some local air districts also regulate public and private motor vehicle fleet operators such as public bus systems, private shuttle and taxi services, and commercial truck depots.

■ Regional Clean Air Plans

Local air districts are responsible for the development and adoption of clean air plans that protect the public from the harmful effects of air pollution. These plans incorporate strategies that are necessary to attain ambient air quality standards. ARB and local district measures to reduce statewide emissions from mobile sources, consumer products, and industrial sources are also included in these regional air plans.

■ Facility-Specific Considerations

Permitting. In addition to the planning function, local air districts adopt and enforce regulations, issue permits, and evaluate the potential environmental impacts of projects.

Pollution is regulated through permits and technology-based rules that limit emissions from operating units within a facility or set standards that vehicle fleet operators must meet. Permits to construct and permits to operate contain very specific requirements and conditions that tell each regulated source what it must do to limit its air pollution in compliance with local air district rules, regulations, and State law. Prior to receiving a permit, new facilities must go through a New Source Review (NSR) process that establishes air pollution control requirements for the facility. Permit conditions are typically contained in the permit to operate and specify requirements that businesses must follow; these may include limits on the amount of pollution that can be emitted, the type of pollution control equipment that must be installed and maintained, and various record-keeping requirements.

Local air districts also notify the public about new permit applications for major new facilities, or major modifications to existing facilities that seek to locate within 1000 feet of a school.

Local air districts can also regulate other types of sources to reduce emissions. These include regulations to reduce emissions from the following sources:

- hazardous materials in products used by industry such as paints, solvents, and de-greasers;
- agricultural and residential burning;
- leaking gasoline nozzles at service stations;
- public fleet vehicles such as sanitation trucks and school buses; and
- fugitive or uncontrolled dust at construction sites.

However, while emissions from industrial and commercial sources are typically subject to the permit authority of the local air district, sensitive sites such as a day care center, convalescent home, or playground are not ordinarily subject to an air permit. Local air district permits address the air pollutant emissions of a project but not its location.

Under the State's air toxics program, local air districts regulate air toxic emissions by adopting ARB air toxic control measures, or more stringent district-specific requirements, and by requiring individual facilities to perform a health risk assessment if emissions at the source exceed district-specific health risk thresholds^{4, 5} (See the section on ARB programs for a more detailed summary of this program).

One approach by which local air districts regulate air toxics emissions is through the "Hot Spots" program.⁶ The risk assessments submitted by the facilities under this program are reviewed by OEHHA and approved by the local air district. Risk assessments are available by contacting the local air district.

Enforcement. Local air districts also take enforcement action to ensure compliance with air quality requirements. They enforce air toxic control measures, agricultural and residential burning programs, gasoline vapor control regulations, laws that prohibit air pollution nuisances, visible emission limits, and many other requirements designed to clean the air. Local districts use a variety of enforcement tools to ensure compliance. These include notices of violation, monetary penalties, and abatement orders. Under some circumstances, a permit may be revoked.

⁴ Cal/EPA's Office of Environmental Health Hazard Assessment has published a Guide to Health Risk Assessment for lay people involved in environmental health issues, including policymakers, businesspeople, members of community groups, and others with an interest in the potential health effects of toxic chemicals. To access this information, please refer to <http://www.oehha.ca.gov/pdf/HRSGuide2001.pdf>

⁵ Section 44306 of the California Health & Safety Code defines a health risk assessment as a detailed comprehensive analysis that a polluting facility uses to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations, and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure.

⁶ AB-2588 (the Air Toxics "Hot Spots" Information and Assessment Act) requires local air districts to prioritize facilities by high, intermediate, and low priority categories to determine which must perform a health risk assessment. Each district is responsible for establishing the prioritization score threshold at which facilities are required to prepare a health risk assessment. In establishing priorities for each facility, local air districts must consider the potency, toxicity, quantity, and volume of hazardous materials released from the facility, the proximity of the facility to potential receptors, and any other factors that the district determines may indicate that the facility may pose a significant risk. All facilities within the highest category must prepare a health risk assessment. In addition, each district may require facilities in the intermediate and low priority categories to also submit a health risk assessment.

Table D-1
Local Sources of Air Pollution, Responsible Agencies,
and Associated Regulatory Programs

Source	Examples	Primary Agency	Applicable Regulations
Large Stationary	Refineries, power plants, chemical facilities, certain manufacturing plants	Local air districts	Operating permit rules Toxic Hot Spots Law (AB 2588) Local district rules Air Toxic Control Measures (ATCMs)* New Source Review rules Title V permit rules
Small Stationary	Dry cleaners, auto body shops, welders, chrome plating facilities, service stations, certain manufacturing plants	Local air districts	Operating permit conditions, Toxic Hot Spot Laws (AB 2588) Local district rules ATCMs* New Source Review rules
Mobile (non-fleet)	Cars, trucks, buses	ARB	Emission standards Cleaner-burning fuels (e.g., unleaded gasoline, low-sulfur diesel) Inspection and repair programs (e.g., Smog Check)
Mobile Equipment	Construction equipment	ARB, U.S. EPA	ARB rules U.S. EPA rules
Mobile (fleet)	Truck depots, school buses, taxi services	Local air districts, ARB	Local air district rules ARB urban bus fleet rule
Areawide	Paints and consumer products such as hair spray and spray paint	Local air district, ARB	ARB rules Local air district rules

*ARB adopts ATCMs, but local air districts have the responsibility to implement and enforce these measures or more stringent ones.

■ Environmental Review

As required by the California Environmental Quality Act (CEQA), local air districts also review and comment on proposed land use plans and development projects that can have a significant effect on the environment or public health.⁷

⁷ Section 4 of this Handbook contains more information on the CEQA process.

State Air Resources Board

The ARB is the air pollution control agency at the State level that is responsible for the preparation of air plans required by State and federal law. In this regard, it coordinates the activities of all local air districts to ensure all statutory requirements are met and to reduce air pollution emissions for sources under its jurisdiction.

Motor vehicles are the single largest emissions source category under ARB's jurisdiction as well as the largest overall emissions source statewide. ARB also regulates emissions from other mobile equipment and engines as well as emissions from consumer products such as hair sprays, perfumes, cleaners, and aerosol paints.

Air Toxics Program

Under State law, the ARB has a critical role to play in the identification, prioritization, and control of air toxic emissions. The ARB statewide comprehensive air toxics program was established in the early 1980's. The Toxic Air Contaminant Identification and Control Act of 1983 (AB 1807, Tanner 1983) created California's program to reduce exposure to air toxics.⁸ The Air Toxics "Hot Spots" Information and Assessment Act (Hot Spots program) supplements the AB 1807 program, by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

Under AB 1807, the ARB is required to use certain criteria to prioritize the identification and control of air toxics. In selecting substances for review, the ARB must consider criteria relating to emissions, exposure, and health risk, as well as persistence in the atmosphere, and ambient concentrations in the community. AB 1807 also requires the ARB to use available information gathered from the Hot Spots program when prioritizing compounds.

The ARB identifies pollutants as toxic air contaminants and adopts statewide air toxic control measures (ATCMs). Once ARB adopts an ATCM, local air districts must implement the measure, or adopt and implement district-specific measures that are at least as stringent as the State standard. Taken in the aggregate, these ARB programs will continue to further reduce emissions, exposure, and health risk statewide.

With regard to the land use decision-making process, ARB, in conjunction with local air districts, plays an advisory role by providing technical information on land use-related air issues.

⁸ For a general background on California's air toxics program, the reader should refer to ARB's website at <http://www.arb.ca.gov/toxics/tac/appendxb.htm>.

Other Agencies*Governor's Office of Planning and Research (OPR)*

In addition to serving as the Governor's advisor on land use planning, research, and liaison with local government, OPR develops and implements the State's policy on land use planning and coordinates the State's environmental justice programs. Most recently, OPR updated its General Plan Guidelines to highlight the importance of sustainable development and environmental justice policies in the planning process. OPR also advises project proponents and government agencies on CEQA provisions and operates the State Clearinghouse for environmental and federal grant documents.

Transportation Agencies

Transportation agencies can also influence mobile source-related emissions in the land use decision-making process. Local transportation agencies work with land use agencies to develop a transportation (circulation) element for the General Plan. These local government agencies then work with other transportation-related agencies, such as the Congestion Management Agency (CMA), Metropolitan Planning Organization (MPO), Regional Transportation Planning Agency (RTPA), and Caltrans to develop long and short range transportation plans and projects.

Caltrans is the agency responsible for setting State transportation goals and for State transportation planning, design, construction, operations and maintenance activities. Caltrans is also responsible for delivering California's multibillion-dollar State Transportation Improvement Program, a list of transportation projects that are approved for funding by the California Transportation Commission in a 4-year cycle.

When safety hazards or traffic circulation problems are identified in the existing road system, or when land use changes are proposed such as a new residential subdivision, shopping mall or manufacturing center, Caltrans and/or the local transportation agency ensure the projects meet applicable State, regional, and local goals and objectives.

Caltrans also evaluates transportation-related projects for regional air quality impacts, from the perspective of travel-related emissions as well as road congestion and increases in road capacity (new lanes).

California Energy Commission (CEC)

The CEC is the State's CEQA lead agency for permitting large thermal power plants (50 megawatts or greater). The CEC works closely with local air districts and other federal, State and local agencies to ensure compliance with applicable laws, ordinances, regulations and standards in the permitting, construction, operation and closure of such plants. The CEC uses an open and public review process that provides communities with outreach and multiple opportunities to participate and be heard. In addition to its comprehensive environmental impact and engineering design assessment process, the

CEC also conducts an environmental justice evaluation. This evaluation involves an initial demographic screening to determine if a qualifying minority or low-income population exists in the vicinity of the proposed project. If such a population is present, staff considers possible environmental justice impacts including from associated project emissions in its technical assessments.⁹

Department of Pesticides Regulation (DPR)

Pesticides are industrial chemicals produced specifically for their toxicity to a target pest. They must be released into the environment to do their job. Therefore, regulation of pesticides focuses on using toxicity and other information to ensure that when pesticides are used according to their label directions, potential for harm to people and the environment is minimized. DPR imposes strict controls on use, beginning before pesticide products can be sold in California, with an extensive scientific program to ensure they can be used safely. DPR and county enforcement staff tracks the use of pesticides to ensure that pesticides are used properly. DPR collects periodic measurements of any remaining amounts of pesticides in water, air, and on fresh produce. If unsafe levels are found, DPR requires changes in how pesticides are used, to reduce the possibility of harm. If this cannot be done - that is, if a pesticide cannot be used safely - use of the pesticide will be banned in California.¹⁰

Federal Agencies

Federal agencies have permit authority over activities on federal lands and certain resources, which have been the subject of congressional legislation, such as air, water quality, wildlife, and navigable waters. The U.S. Environmental Protection Agency generally oversees implementation of the federal Clean Air Act, and has broad authority for regulating certain activities such as mobile sources, air toxics sources, the disposal of toxic wastes, and the use of pesticides. The responsibility for implementing some federal regulatory programs such as those for air and water quality and toxics is delegated by management to specific state and local agencies. Although federal agencies are not subject to CEQA they must follow their own environmental process established under the National Environmental Policy Act (NEPA).

⁹ See California Energy Commission, "Environmental Performance Report," July 2001 at http://www.energy.ca.gov/reports/2001-11-20_700-01-001.PDF

¹⁰ For more information, the reader is encouraged to visit the Department of Pesticide Regulation web site at www.cdpr.ca.gov/docs/emppm/pubs/tacmenu.htm.

SPECIAL PROCESSES THAT APPLY TO SCHOOL SITING

The [California Education Code](#) and the [California Public Resources Code](#) place primary authority for siting public schools with the local school district, which is the 'lead agency' for purposes of CEQA. The California Education Code requires public school districts to notify the local planning agency about siting a proposed new public school or expanding an existing school. The planning agency then reports back to the school district regarding a project's conformity with the adopted General Plan. However, school districts can overrule local zoning and land use designations for schools if they follow specified procedures. In addition, all school districts must evaluate proposed new school sites using site selection standards established in Section 14010 of Title 5 of the California Code of Regulations. Districts seeking state funding for school site acquisition must also obtain site approval from the California Department of Education.

Before making a final decision on a school site acquisition, a school district must comply with CEQA and evaluate the proposed site acquisition/new school project for air emissions and health risks by preparing and certifying an environmental impact report or negative declaration. Both the California Education Code section 17213 and the California Public Resources Code section 21151.8 require school districts to consult with administering agencies and local air districts when preparing the environmental assessment. Such consultation is required to identify both permitted and non-permitted "facilities" that might significantly affect health at the new site. These facilities include, but are not limited to, freeways and other busy traffic corridors, large agricultural operations, and rail yards that are within one-quarter mile of the proposed school site, and that might emit hazardous air emissions, or handle hazardous or acutely hazardous materials, substances, or waste.

As part of the CEQA process and before approving a school site, the school district must make a finding that either it found none of the facilities or significant air pollution sources, or alternatively, if the school district finds that there are such facilities or sources, it must determine either that they pose no significant health risks, or that corrective actions by another governmental entity would be taken so that there would be no actual or potential endangerment to students or school workers.

In addition, if the proposed school site boundary is within 500 feet of the edge of the closest traffic lane of a freeway or traffic corridor that has specified minimum average daily traffic counts, the school district is required to determine through specified risk assessment and air dispersion modeling that neither short-term nor long term exposure poses significant health risks to pupils.

State law changes effective January 1, 2004 (SB352, Escutia 2003, amending Education Code section 17213 and Public Resources Code section 21151.8) also provides for cases in which the school district cannot make either of those two findings and cannot find a suitable alternative site. When this occurs, the school district must adopt a statement of over-riding considerations, as part of an environmental impact

report, that the project should be approved based on the ultimate balancing of the merits.

Some school districts use a standardized assessment process to determine the environmental impacts of a proposed school site. In the assessment process, school districts can use maps and other available information to evaluate risk, including a local air district's database of permitted source emissions. School districts can also perform field surveys and record searches to identify and calculate emissions from non-permitted sources within one-quarter mile radius of a proposed site. Traffic count data and vehicular emissions data can also be obtained for major roadways and freeways in proximity to the proposed site to model potential emissions impacts to students and school employees. This information is available from the local COG, Caltrans, or local cities and counties for non-State maintained roads.

GENERAL PROCESSES USED BY LAND USE AGENCIES TO ADDRESS AIR POLLUTION IMPACTS

There are several separate but related processes for addressing the air pollution impacts of land use projects. One takes place as part of the planning and zoning function. This consists of preparing and implementing goals and policies contained in county or city General Plans, community or area plans, and specific plans governing land uses such as residential, educational, commercial, industrial, and recreational activities. It also includes recommending locations for thoroughfares, parks and other public improvements.

Land use agencies also have a permitting function that includes performing environmental reviews and mitigation when projects may pose a significant environmental impact. They conduct inspections for zoning permits issued, enforce the zoning regulations and issue violations as necessary, issue zoning certificates of compliance, and check compliance when approving certificates of occupancy.

Planning

■ **General Plan¹**

The General Plan is a local government “blueprint” of existing and future anticipated land uses for long-term future development. It is composed of the goals, policies, and general elements upon which land use decisions are based. Because the General Plan is the foundation for all local planning and development, it is an important tool for implementing policies and programs beneficial to air quality. Local governments may choose to adopt a separate air quality element into their General Plan or to integrate air quality-beneficial objectives, policies, and strategies in other elements of the Plan, such as the land use, circulation, conservation, and community design elements.

More information on General Plan elements is contained in Appendix D.

■ **Community Plans**

Community or area plans are terms for plans that focus on a particular region or community within the overall general plan area. It refines the policies of the general plan as they apply to a smaller geographic area and is implemented by ordinances and other discretionary actions, such as zoning.

¹ In October 2003, OPR revised its General Plan Guidelines. An entire chapter is now devoted to a discussion of how sustainable development and environmental justice goals can be incorporated into the land use planning process. For further information, the reader is encouraged to obtain a copy of OPR's General Plan Guidelines, or refer to their website at:
http://www.opr.ca.gov/planning/PDFs/General_Plan_Guidelines_2003.pdf

■ Specific Plan

A specific plan is a hybrid that can combine policies with development regulations or zoning requirements. It is often used to address the development requirements for a single project such as urban infill or a planned community. As a result, its emphasis is on concrete standards and development criteria.

■ Zoning

Zoning is the public regulation of the use of land. It involves the adoption of ordinances that divide a community into various districts or zones. For instance, zoning ordinances designate what projects and activities can be sited in particular locations. Each zone designates allowable uses of land within that zone, such as residential, commercial, or industrial. Zoning ordinances can address building development standards, e.g., minimum lot size, maximum building height, minimum building setback, parking, signage, density, and other allowable uses.

Land Use Permitting

In addition to the planning and zoning function, land use agencies issue building and business permits, and evaluate the potential environmental impacts of projects. To be approved, projects must be located in a designated zone and comply with applicable ordinances and zoning requirements.

Even if a project is sited properly in a designated zone, a land use agency may require a new source to mitigate potential localized environmental impacts to the surrounding community below what would be required by the local air district. In this case, the land use agency could condition the permit by limiting or prescribing allowable uses including operating hour restrictions, building standards and codes, property setbacks between the business property and the street or other structures, vehicle idling restrictions, or traffic diversion.

Land use agencies also evaluate the environmental impacts of proposed land use projects or activities. If a project or activity falls under CEQA, the land use agency requires an environmental review before issuing a permit to determine if there is the potential for a significant impact, and if so, to mitigate the impact or possibly deny the project.

■ Land Use Permitting Process

In California, the authority to regulate land use is delegated to city and county governments. The local land use planning agency is the local government administrative body that typically provides information and coordinates the review of development project applications. Conditional Use Permits (CUP) typically fall within a land use agency's discretionary authority and therefore are subject to CEQA. CUPs

intended to provide an opportunity to review the location, design, and manner of development of land uses prior to project approval. A traditional purpose of the CUP is to enable a municipality to control certain uses that could have detrimental environmental effects on the community.

The process for permitting new discretionary projects is quite elaborate, but can be broken down into five fundamental components:

- Project application
- Environmental assessment
- Consultation
- Public comment
- Public hearing and decision

Project Application

The permit process begins when the land use agency receives a project application, with a detailed project description, and support documentation. During this phase, the agency reviews the submitted application for completeness. When the agency deems the application to be complete, the permit process moves into the environmental review phase.

Environmental Assessment

If the project is discretionary and the application is accepted as complete, the project proposal or activity must undergo an environmental clearance process under CEQA and the CEQA Guidelines adopted by the California Resources Agency.² The purpose of the CEQA process is to inform decision-makers and the public of the potential significant environmental impacts of a project or activity, to identify measures to minimize or eliminate those impacts to the point they are no longer significant, and to discuss alternatives that will accomplish the project goals and objectives in a less environmentally harmful manner.

What is a “Lead Agency”?

A lead agency is the public agency that has the principal responsibility for carrying out or approving a project that is subject to CEQA. In general, the land use agency is the preferred public agency serving as lead agency because it has jurisdiction over general land uses. The lead agency is responsible for determining the appropriate environmental document, as well as its preparation.

What is a “Responsible Agency”?

A responsible agency is a public agency with discretionary approval authority over a portion of a CEQA project (e.g., projects requiring a permit). As a responsible agency, the agency is available to the lead agency and project proponent for early consultation on a project to apprise them of applicable rules and regulations, potential adverse impacts, alternatives, and mitigation measures, and provide guidance as needed on applicable methodologies or other related issues.

What is a “Commenting Agency”?

A commenting agency is any public agency that comments on a CEQA document, but is neither a lead agency nor a responsible agency. For example, a local air district, as the agency with the responsibility for comprehensive air pollution control, could review and comment on an air quality analysis in a CEQA document for a proposed distribution center, even though the project was not subject to a permit or other pollution control requirements.

² Projects and activities that may have a significant adverse impact on the environment are evaluated under CEQA Guidelines set forth in title 14 of the California Code of Regulations, sections 15000 et seq.

To assist the lead agency in determining whether the project or activity may have a significant effect that would require the preparation of an EIR, the land use agency may consider criteria, or thresholds of significance, to assess the potential impacts of the project, including its air quality impacts. The land use agency must consider any credible evidence in addition to the thresholds, however, in determining whether the project or activity may have a significant effect that would trigger the preparation of an EIR.

The screening criteria to determine significance is based on a variety of factors, including local, State, and federal regulations, administrative practices of other public agencies, and commonly accepted professional standards. However, the final determination of significance for individual projects is the responsibility of the lead agency. In the case of land use projects, the lead agency would be the City Council or County Board of Supervisors.

A new land use plan or project can also trigger an environmental assessment under CEQA if, among other things, it will expose sensitive sites such as schools, day care centers, hospitals, retirement homes, convalescence facilities, and residences to substantial pollutant concentrations.³

CEQA only applies to “discretionary projects.” Discretionary means the public agency must exercise judgment and deliberation when deciding to approve or disapprove a particular project or activity, and may append specific conditions to its approval. Examples of discretionary projects include the issuance of a CUP use permit, re-zoning a property, or widening of a public road. Projects that are not subject to the exercise of agency discretion, and can therefore be approved administratively through the application of set standards are referred to as ministerial projects. CEQA does not apply to ministerial projects.⁴ Examples of typical ministerial projects include the issuance of most building permits or a business license.

Once a potential environmental impact associated with a project is identified through an environmental assessment, mitigation must be considered. A land use agency should incorporate mitigation measures that are suggested by the local air district as part of the project review process.

Consultation

Application materials are provided to various departments and agencies that may have an interest in the project (e.g., air pollution, building, police, fire, water agency, Fish and Game, etc.) for consultation and input.

³ Readers interested in learning more about CEQA should contact OPR or visit their website at <http://www.opr.ca.gov/>.

⁴ See California Public Resources Code section 21080(b)(1).

Public Comment

Following the environmental review process, the Planning Commission reviews application along with the staff's report on the project assessment and a public comment period is set and input is solicited.

Public Hearing and Decision

Permit rules vary depending on the particular permit authority in question, but the process generally involves comparing the proposed project with the land use agency standards or policies. The procedure usually leads to a public hearing, which is followed by a written decision by the agency or its designated officer. Typically, a project is approved, denied, or approved subject to specified conditions.

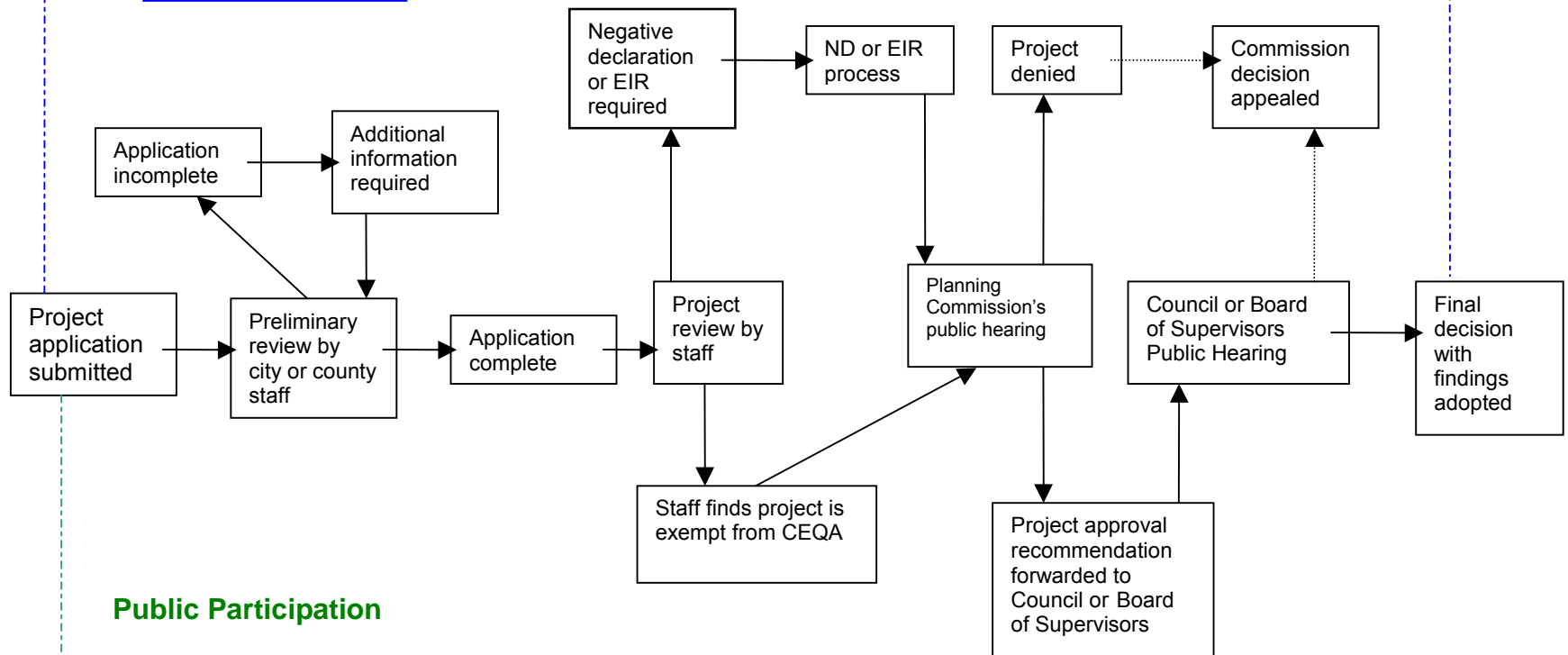
USE PERMIT (DISCRETIONARY ACTION) REVIEW PROCESS*

Air District

Consult with local air district on potential for air pollution impacts, and if project will require, or has obtained, an air permit.

Obtain local air district comments on potential air pollution impacts

Notification to local air district



Public Participation

Notify affected community of proposed project, the process for public review, and staff determination of CEQA eligibility

Public outreach to affected community (i.e., workshops, evening meetings, fliers, etc.)

Notification to the affected public

*Public input and district consultation should occur throughout the process, but especially at the project proposal phase.

GLOSSARY OF KEY AIR POLLUTION TERMS

Air Pollution Control Board or Air Quality Management Board: Serves as the governing board for local air districts. It consists of appointed or elected members from the public or private sector. It conducts public hearings to adopt local air pollution regulations.

Air Pollution Control Districts or Air Quality Management Districts (local air district): A county or regional agency with authority to regulate stationary and area sources of air pollution within a given county or region. Governed by a district air pollution control board.

Air Pollution Control Officer (APCO): Head of a local air pollution control or air quality management district.

Air Toxic Control Measures (ATCM): A control measure adopted by the ARB (Health and Safety Code section 39666 et seq.), which reduces emissions of toxic air contaminants.

Ambient Air Quality Standards: An air quality standard defines the maximum amount of a pollutant that can be present in the outdoor air during a specific time period without harming the public's health. Air quality standards may only be established by the U.S. EPA and the ARB. No other state has this authority. Air quality standards are a measure of clean air. More specifically, an air quality standard establishes the concentration at which a pollutant is known to cause adverse health effects to sensitive groups within the population, such as children and the elderly. Federal standards are referred to as National Ambient Air Quality Standards (NAAQS); State standards are referred to as California ambient air quality standards (CAAQS).

Area-wide Sources: Sources of air pollution that individually emit small amounts of pollution, but together add up to significant quantities of pollution. Examples include consumer products, fireplaces, road dust, and farming operations.

Attainment vs. Nonattainment Area: An attainment area is a geographic area that meets the National Ambient Air Quality Standards for the criteria pollutants and a non-attainment area is a geographic area that doesn't meet the NAAQS for criteria pollutants.

Attainment Plan: Attainment plans lay out measures and strategies to attain one or more air quality standards by a specified date.

Buffer Zone: An area of land separating two distinct land uses that acts to soften or mitigate the effects of one land use on the other.

California Clean Air Act (CCAA): A California law passed in 1988, which provides the basis for air quality planning and regulation independent of federal regulations. A major element of the Act is the requirement that local air districts in violation of the CAAQS must prepare attainment plans which identify air quality problems, causes, trends, and actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.

California Environmental Quality Act (CEQA): A California law that sets forth a process for public agencies to make informed decisions on discretionary project approvals. The process helps decision-makers determine whether any potential, significant, adverse environmental impacts are associated with a proposed project and to identify alternatives and mitigation measures that will eliminate or reduce such adverse impacts.¹

California Health and Safety Code: A compilation of California laws, including State air pollution laws, enacted by the Legislature to protect the health and safety of people in California. Government agencies adopt regulations to implement specific provisions of the California Health and Safety Code.

Clean Air Act (CAA): The federal Clean Air Act was adopted by the United States Congress and sets forth standards, procedures, and requirements to be implemented by the U.S. Environmental Protection Agency (U.S. EPA) to protect air quality in the United States.

Councils of Government (COGs): There are 25 COGs in California made up of city and county elected officials. COGs are regional agencies concerned primarily with transportation planning and housing; they do not directly regulate land use.

Criteria Air Pollutant: An air pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Examples include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM10 and PM2.5. The term "criteria air pollutants" derives from the requirement that the U.S. EPA and ARB must describe the characteristics and potential health and welfare effects of these pollutants. The U.S. EPA and ARB periodically review new scientific data and may propose revisions to the standards as a result.

District Hearing Board: Hears local air district permit appeals and issues variances and abatement orders. The local air district board appoints the members of the hearing board.

Emission Inventory: An estimate of the amount of pollutants emitted into the atmosphere from mobile, stationary, area-wide, and natural source categories over a specific period of time such as a day or a year.

¹ To track the submittal of CEQA documents to the State Clearinghouse within the Office of Planning and Research, the reader can refer to CEQAnet at <http://www.ceqanet.ca.gov>.

Environmental Impact Report (EIR): The public document used by a governmental agency to analyze the significant environmental effects of a proposed project, to identify alternatives, and to disclose possible ways to reduce or avoid the possible negative environmental impacts.

Environmental Justice: California law defines environmental justice as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (California Government Code sec.65040.12(c)).

General Plans: A statement of policies developed by local governments, including text and diagrams setting forth objectives, principles, standards, and plan proposals for the future physical development of the city or county.

Hazardous Air Pollutants (HAPs): An air pollutant listed under section 112 (b) of the federal Clean Air Act as particularly hazardous to health. Emission sources of hazardous air pollutants are identified by U.S. EPA, and emission standards are set accordingly. In California, HAPs are referred to as toxic air contaminants.

Mobile Source: Sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats, and airplanes.

National Ambient Air Quality Standard (NAAQS): A limit on the level of an outdoor air pollutant established by the US EPA pursuant to the Clean Air Act. There are two types of NAAQS. Primary standards set limits to protect public health and secondary standards set limits to protect public welfare.

Negative Declaration (ND): When the lead agency (the agency responsible for preparing the EIR or ND) under CEQA, finds that there is no substantial evidence that a project may have a significant environmental effect, the agency will prepare a "negative declaration" instead of an EIR.

New Source Review (NSR): A federal Clean Air Act requirement that state implementation plans must include a permit review process, which applies to the construction and operation of new or modified stationary sources in nonattainment areas. Two major elements of NSR to reduce emissions are best available control technology requirements and emission offsets.

Office of Planning and Research (OPR): OPR is part of the Governor's office. OPR has a variety of functions related to local land-use planning and environmental programs. It provides General Plan Guidelines for city and county planners, and coordinates the state clearinghouse for Environmental Impact Reports.

Ordinance: A law adopted by a city council or County Board of Supervisors. Ordinances usually amend, repeal or supplement the municipal code; provide zoning specifications; or appropriate money for specific purposes.

Overriding Considerations: A ruling made by the lead agency in the CEQA process when the lead agency finds the importance of the project to the community outweighs potential adverse environmental impacts.

Public Comment: An opportunity for the general public to comment on regulations and other proposals made by government agencies. You can submit written or oral comments at the public meeting or send your written comments to the agency.

Public Hearing: A public hearing is an opportunity to testify on a proposed action by a governing board at a public meeting. The public and the media are welcome to attend the hearing and listen to, or participate in, the proceedings.

Public Notice: A public notice identifies the person, business, or local government seeking approval of a specific course of action (such as a regulation). It describes the activity for which approval is being sought, and describes the location where the proposed activity or public meeting will take place.

Public Nuisance: A public nuisance, for the purposes of air pollution regulations, is defined as a discharge from any source whatsoever of such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. (Health and Safety Code section 41700).

Property Setback: In zoning parlance, a setback is the minimum amount of space required between a lot line and a building line.

Sensitive Individuals: Refers to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality).

Sensitive Sites: Land uses where sensitive individuals are most likely to spend time, including schools and schoolyards, parks and playgrounds, day care centers, nursing homes, hospitals, and residential communities.

State Implementation Plan (SIP): A plan prepared by state and local agencies and submitted to U.S. EPA describing how each area will attain and maintain national ambient air quality standards. SIPs include the technical information about emission inventories, air quality monitoring, control measures and strategies, and enforcement mechanisms. A SIP is composed of local air quality management plans and State air quality regulations.

Stationary Sources: Non-mobile sources such as power plants, refineries, and manufacturing facilities.

Toxic Air Contaminant (TAC): An air pollutant, identified in regulation by the ARB, which may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health. TACs are considered under a different regulatory process (California Health and Safety Code section 39650 et seq.) than pollutants subject to State Ambient Air Quality Standards. Health effects associated with TACs may occur at extremely low levels. It is often difficult to identify safe levels of exposure, which produce no adverse health effects.

Urban Background: The term is used in this Handbook to represent the ubiquitous, elevated, regional air pollution levels observed in large urban areas in California.

Zoning ordinances: City councils and county boards of supervisors adopts zoning ordinances that set forth land use classifications, divides the county or city into land use zones as delineated on the official zoning, maps, and set enforceable standards for future development.

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